MOP0306005A2

Service Manual

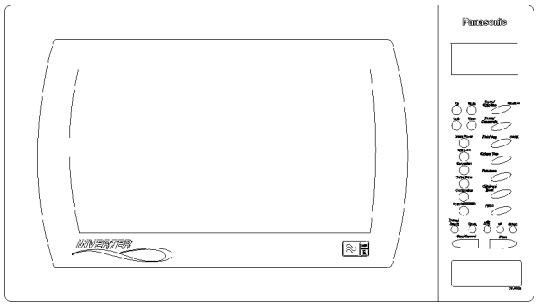
Microwave Oven

NN-V673SBBPQ

27 L

United Kingdom

Please file and use this manual together with the service manual for Model No. NN-V671S



SPECIFICATIONS

Power source :	240VAC Single Phase, 50Hz
Power requirements:	Microwave : 1300W
Output: (IEC705-88)	Microwave : 900W
Microwave Frequency	2450Mhz
Timer:	99 min 99 second
Oven cavity size	27L
Outside dimensions:	510 mm (W) X 380mm (D) x 304mm (H)
Inside dimensions	359mm (W) x 352mm (D) x 217mm (H)
Weight	11.5 Kg
Inverter power Supply	
Output Power Supply	IEC705-88 Test procedure
Specifications subject to change without notice	

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

1. Description of operation

1.1. Auto weight defrost, Auto weight Cook

When an auto control feature is selected and the start pad pressed:

1. **The digital programmer circuit determines the power level and the cooking time and indicates the operating state in the display. The table shows the corresponding cooking times for each category and its respective weight.**
2. **When the cooking time in the display window has elapsed, the oven turns off automatically via the control signal from the digital programmer circuit.**
   Note: After auto cooking if the oven temperature is over the predetermined temperature the fan motor rotates to cool the oven and its components.

Auto Weight Defrost

Category	1st Touch Weight	Cooking Time
Bread	100g	45s
Meat Items	200g	2m 10s
Meat Joints	400g	6m 20s

Auto weight Cook

Category	1st Touch Weight	Cooking Time
1.Curry	300g	3m 30s
2.Chinese Style	200g	2m 10s
3.Pasta	250g	2m 55s
4.Casserole	300g	3m 15s
5.Fresh Fish	100g	1m 30s
6.Fresh Vegetables	100g	2m 20s
7.Chilled Crispy Top	300g	8m
8.Frozen Crispy Top	300g	12m
9.Jacket Potatoes	200g	9m
10.Frozen Potato Products	200g	8m
11.Whole Chicken	1000g	19m 20s
12.Lamb/Beef	500g	14m 40s
13.Chilled Pizza	200g	6m 40s
14.Frozen Pizza	200g	9m

2. Main Parts List

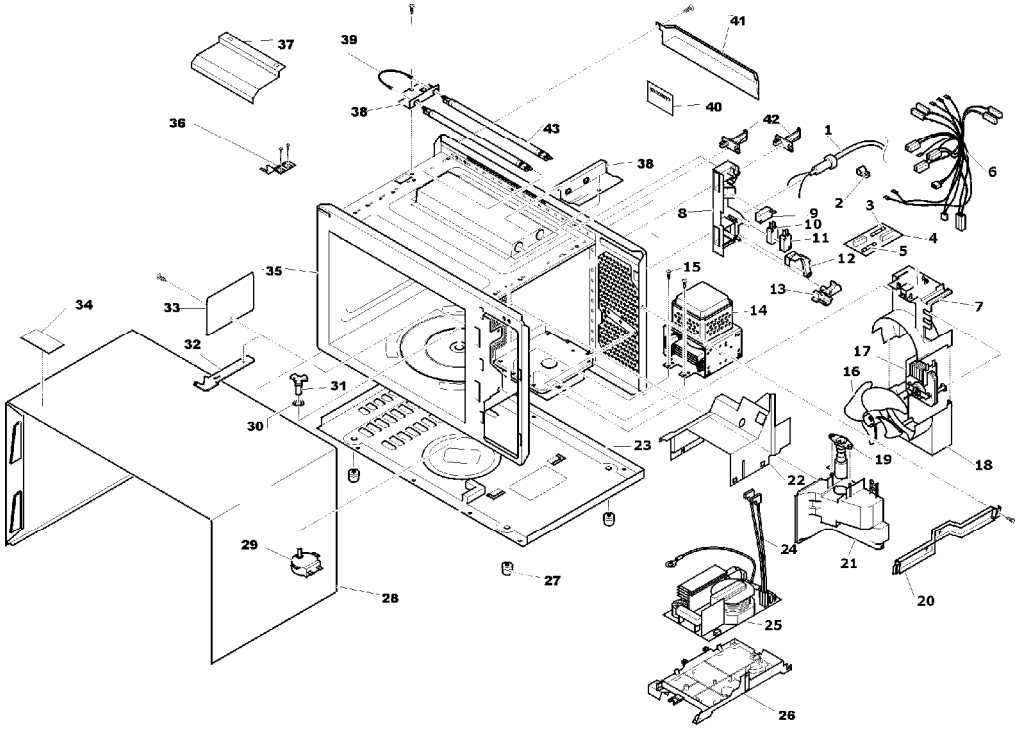
1. Part numbers are indicated on most mechanical parts. Please use these part numbers for part orders. Do not use the description of the part.

Important safety notice

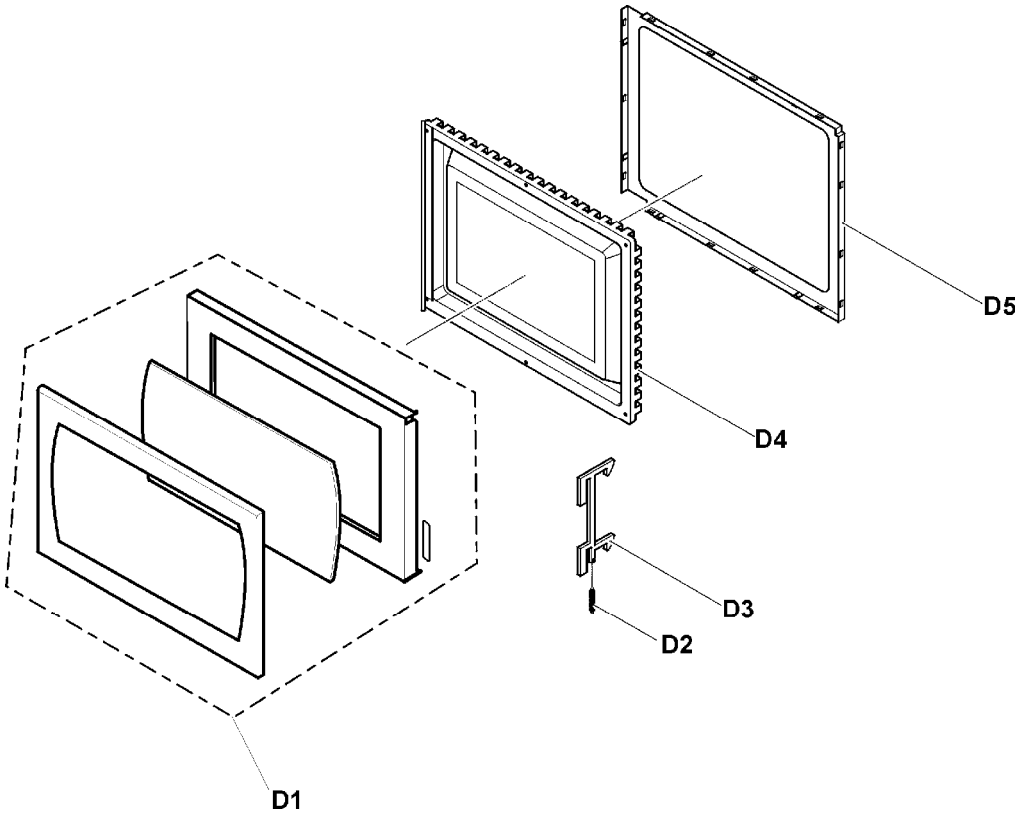
1. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturers specified parts.

Ref. No.		Part Number	Part Name and Description	Qty	Remarks
1	⚠	E901C6520BP	POWER SUPPLY CORD	1	
2		AEE9108A20GN	POWER CORD CLIP	1	
3	⚠	ANE6230P10GN	FUSE 16A	1	
4	⚠	E607X4N30BP	NOISE FILTER	1	
5	⚠	E67597550GP	CERAMIC FUSE 10A	1	
6	⚠	E030A56C10BP	LEADWIRE HARNESS	1	
7		E41444N30BP	UPPER ORIFICE	1	
8		E30208000BP	DOOR HOOK	1	
9	⚠	E6142-1450	PRIMARY LATCH SWITCH	1	
10	⚠	E61785180AP	SHORT SWITCH	1	
11	⚠	E61425180AP	SECONDARY LATCH SWITCH	1	
12		E31384830AP	HOOK SPACER C	1	
13		E31374830AP	HOOK SPACER B	1	
14	⚠	2M236-M42G1	MAGNETRON	1	
15		EXTT4+11JN	SCREW	12	
16		E4008-1640	FAN BLADE	1	
17	⚠	E400A4760JP	FAN MOTOR	1	
18		E42094N30BP	LOWER ORIFICE	1	
19	⚠	E610T5D00BP	OVEN LAMP UNIT	1	
20		E20994N30GP	REINFORCEMENT BRACK	1	
21		E40254N40GS	AIR GUIDE A	1	
22		E40474V00BP	AIR GUIDE E	1	
23		E10014N30BP	BASEPLATE	1	
24	⚠	E030E4N30BP	HV LEADWIRE	1	
25	⚠	E606Y4V00BP	INVERTER	1	
26		E65854V00BP	INVERTOR SUPPORT BRACKET	1	
27		E1008-1180	RUBBER FOOT	4	
28		E110D5D20SBP	OUTER PANEL	1	
29	⚠	E63268960JP	TT MOTOR	1	
30		AEE2177-F80	PULLEY SHAFT WASHER	1	
31		E21315870GP	PULLY SHAFT	1	
32		E30074L00GP	BOTTOM HINGE	1	
33		E20554L00GS	COVER A	1	
34		E01507560BP	WARNING LABEL	1	
35		E200A4N30BP	OVEN CAVITY	1	
36		E30064N30BP	UPPER HINGE	1	
37		E22784V00SGP	UPPER HEATER PANEL	2	
38		E64604N30BP	HEATER SUPPORT BRACKET	1	
39		E03594N30GP	LEADWIRE GRILL LINK	1	
40		E00064080BP	WARNING LABEL	1	
41		E40244N30BP	EXHAUST GUIDE	2	
42	⚠	E11405840GP	STOPPER A	2	
43	⚠	E630G8000GP	QUARTZ HEATER	2	

3. Main Exploded View



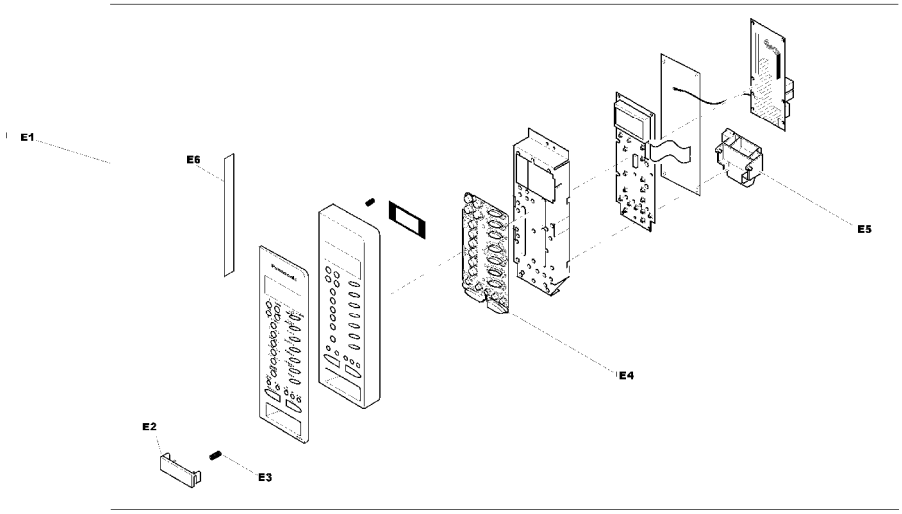
4. Door Exploded View



Ref. No.		Part No.	Part Name & Description	Remarks	Part No.
D1	⚠	E302A6C10SBP	DOOR A ASSEMBLY	1	
D2		E30214000AP	DOOR KEY SPRING	1	
D3		E30184L00GS	DOOR KEY	1	
D4		E302K4N30BP	DOOR E ASSEMBLY	1	
D5		E30854N30BP	DOOR C	1	

NOTE: When ordering any Door component also order door C as this part may become damaged during disassembly.

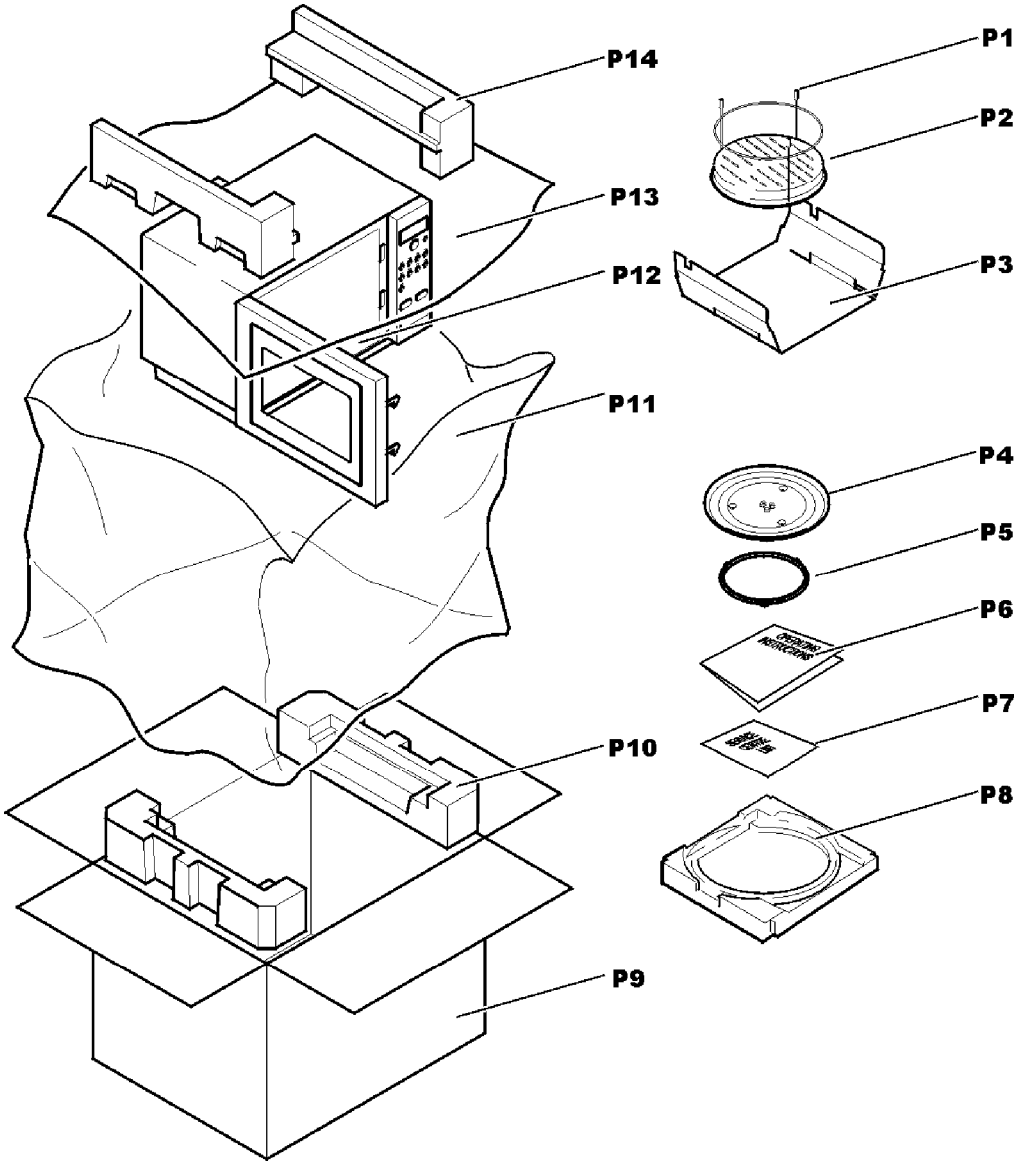
5. Escutcheon Base Exploded View



Ref. No.		Part No.	Part Name & Description	Qty	Remarks
E1	⚠	E890L6C10SBP	ESCUTCHEON BASE	1	
E2		E80726B20SBP	DOOR OPENING BUTTON	1	
E3		E80375K00AP	DOOR OPENING SPRING	1	
E4		E80246C10SBP	OPERATION BUTTON	1	
E5		E82566B20ABP	DOOR OPENING LEVER	1	
E6		E00076B20ABP	NAMEPLATE	1	

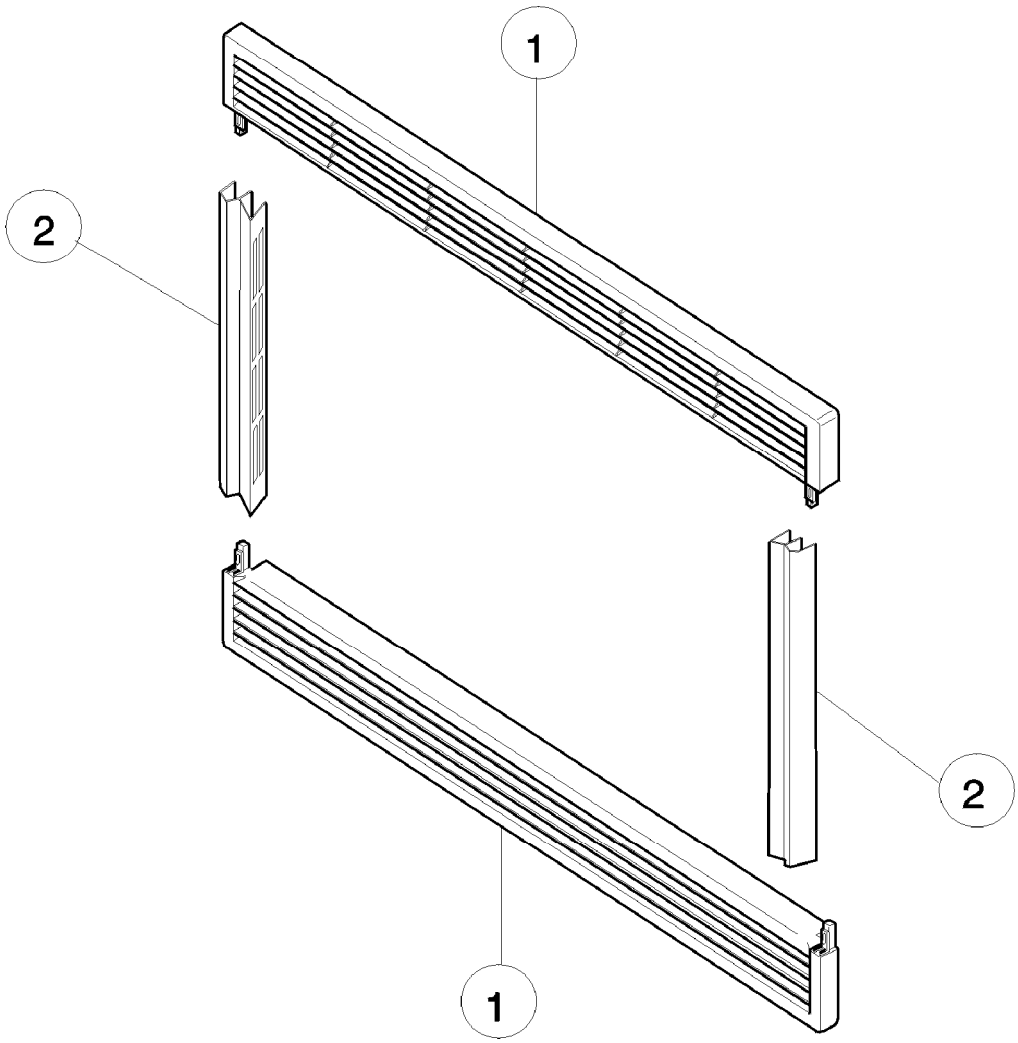
NOTE 1: If the part you need is not numbered in the exploded view, order E1 the complete assembly.
NOTE 2: When ordering a new Escutcheon base assembly (E1), also order a nameplate (E5). Write the model number and serial number of the microwave oven onto the new name plate. Fix the new name plate to the new escutcheon base assembly.

6. Packing and Accesories



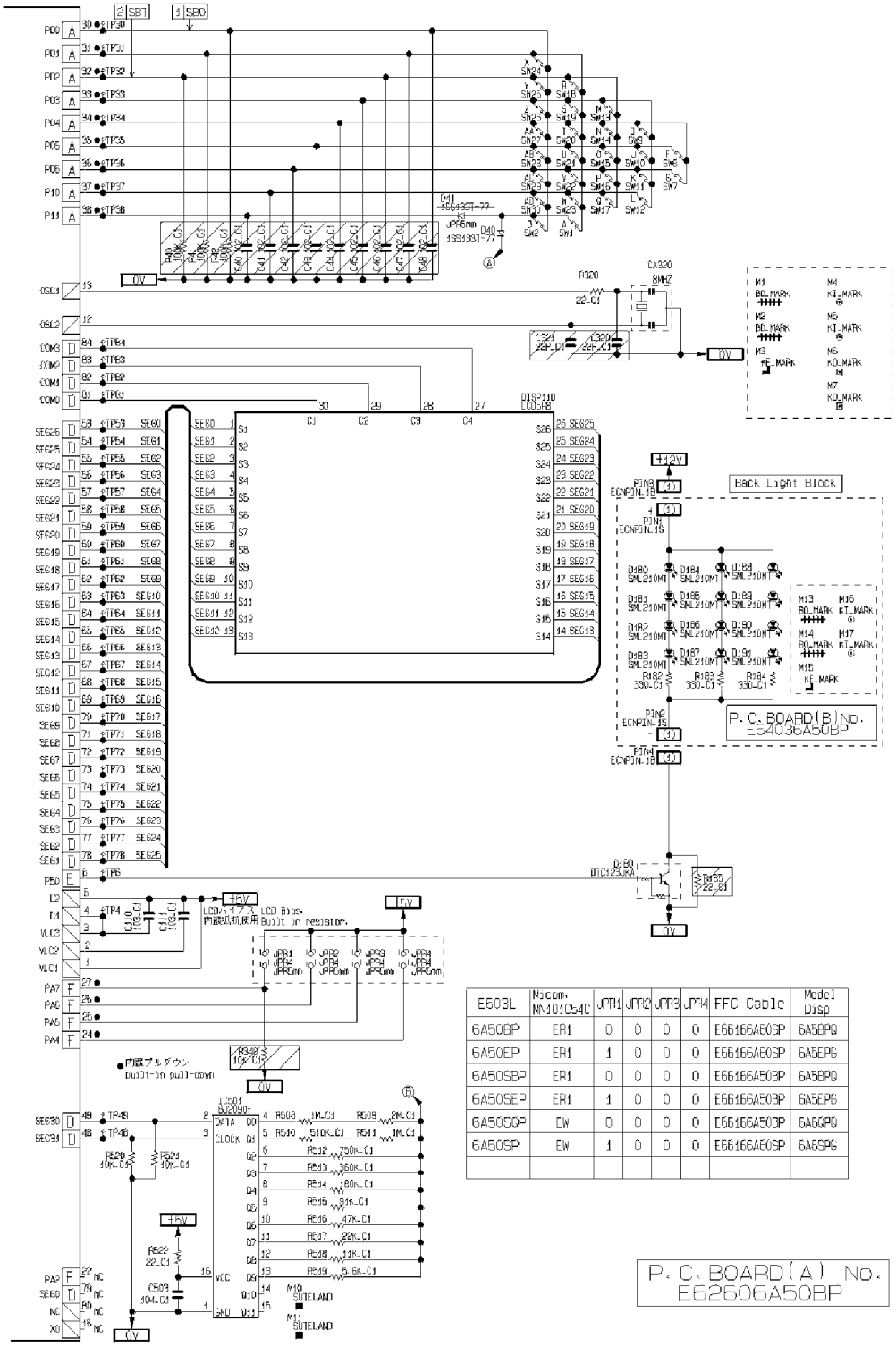
Ref. No.		Part No.	Part Name & Description	Qty	Remarks
P1		E06435870SP	RUBBER FOOT	3	
P2		E060V5870SP	WIRE RACK	1	
P3		E01084N30GP	TRAY PACKING	1	
P4		E06014N30BP	GLASS TRAY	1	
P5		E290D4N30BP	ROLLER RING UNIT	1	
P6		E00036C10BP	COOK BOOK	1	
P7		E01695750BP	SERVICE CENTER LIST	1	
P8		E01134N30BP	TRAY STYROL	1	
P9		E01025N20BP	CARTON BOX	1	NN-V681WB
P10		E01054N30BP	LOWER FILLER	1	
P11		E01064N70GS	VINYL BAG	1	
P12		E01076700BP	DOOR SHEET	1	
P13		E01926430GP	PROTECTOR SHEET	1	
P14		E01044N30BP	UPPER FILLER	1	

7. Trim Kit Accesories

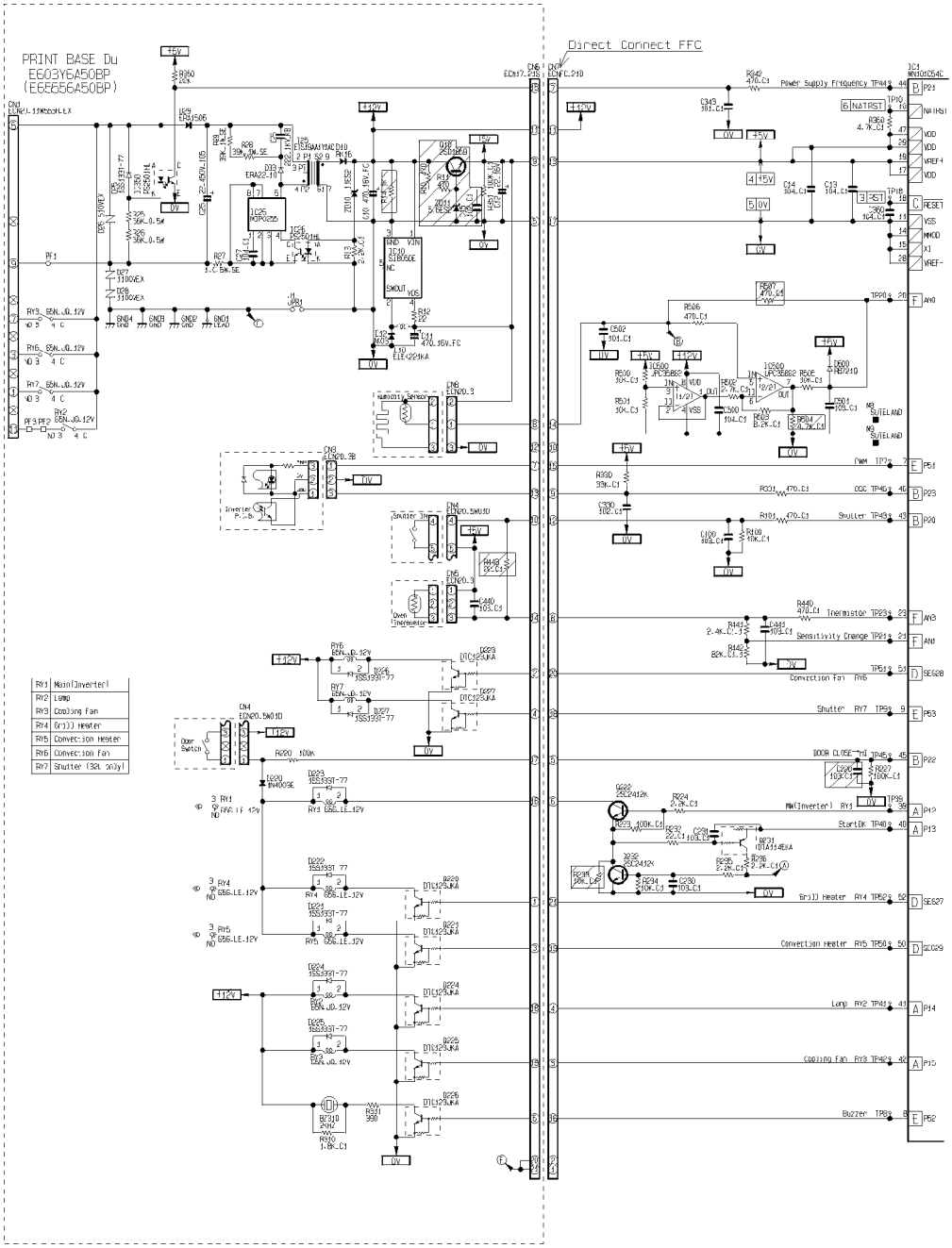


Trim model number	Top and bottom strip REF 1	Qty	Top and bottom strip REF 2	Qty	Remarks
NN-TKA70MB	E1603A510NBP	1	E1601A510NBP	1	
	E000QA820BP				Installation guide

8. DPC Schematic



E603L	Micom. MN101C54C	JPR1	JPR2	JPR3	JPR4	FFC Cable	Model Disp
6A50BP	ER1	0	0	0	0	E66166A60SP	6A5BPG
6A50EP	ER1	1	0	0	0	E66166A60SP	6A5EPG
6A50SBP	ER1	0	0	0	0	E66166A50BP	6A5BPG
6A50SEP	ER1	1	0	0	0	E66166A50BP	6A5EPG
6A50SOP	EW	0	0	0	0	E66166A50BP	6A60PG
6A50SP	EW	1	0	0	0	E66166A60SP	6A6SPG


PRINT BASE Du
E603Y6A50BP
(E6E656A50BP)
Direct Connect FFC
RY1 Main(Inverter)
RY2 Lamp
RY3 Cooling Fan
RY4 Grill Heater
RY5 Convection Heater
RY6 Convection Fan
RY7 Shutter (Sol. only)
Power Supply Frequency
Thermistor
Sensitivity Change
Convection Fan
Shutter
DOOR CLOSE
Start(Inverter)
Grill Heater
Convection Heater
Lamp
Cooling Fan
Buzzer

MOP01060021C2

Service Manual

Microwave Oven

INVERTER SYSTEM INSIDE

NN-V681WB / NN-V671SB / NN-V621MB / NN-V651WB / NN-V651CB

27L

United Kingdom

SPECIFICATIONS

Power source :	240VAC Single Phase, 50Hz
Power requirements:	Microwave : 1300W Grill : 1410W, Maximum 2450W
Output: (IEC705-88)	Microwave : 900W Grill : 1300W
Microwave Frequency	2450Mhz
Timer:	99 min 99 second
Oven cavity size	
Outside dimensions:	27L
Inside dimensions	510 mm (W) X 380mm (D) x 304mm (H)
Weight	359mm (W) x 352 (D) x 217mm (H)
Inverter power Supply	13Kg
Output Power Supply	IEC705-88 Test procedure

Specifications subject to change without notice

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1. Inverter warning

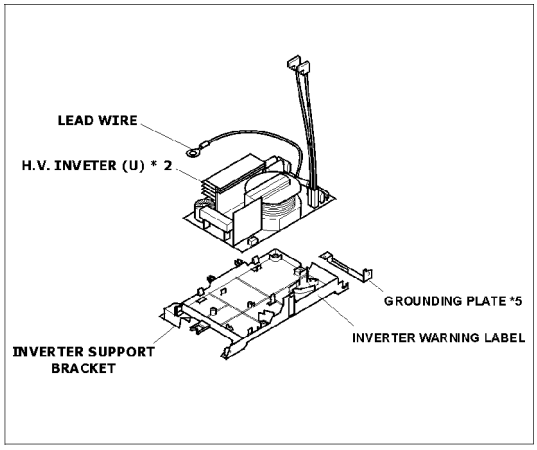
The inverter board looks like a normal printed circuit board. However, this printed circuit board supplies the magnetron tube with very high voltage and current.
The inverter PCB:

1. **Produces very high voltage and current.**
2. **Has an Aluminium heat sink which becomes very hot.**
3. **Has capacitors in the circuitry that hold a high voltage charge even when the oven is not operating.**

Do not

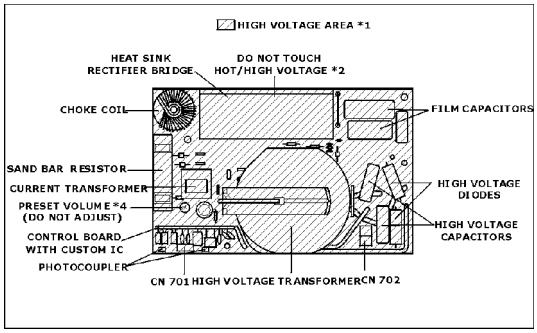
1. **Do not touch the high voltage circuitry. When replacing the board take extreme care to avoid possible electric shock.**
2. **Do not touch the aluminium heat sink as it is part of the high voltage circuit and becomes very hot.**
3. **Do not attempt to repair the inverter PCB as this can be very dangerous. Replace the high voltage, inverter circuit as a complete unit.**
4. **Do not adjust or tamper with the pre-set volume on the inverter board. It is very dangerous to adjust this pre-set without proper test equipment.**
5. **Do not operate the microwave oven when the inverter grounding plate and fixing screw is loose. It is very dangerous to operate the inverter circuit board with out a proper ground connection.**

Figure 1



Inverter Power Supply Diagram

Figure 2



Inverter Layout

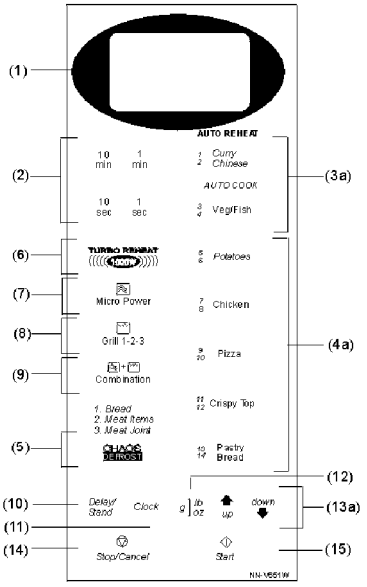
2. FEATURE CHART

Function	NN-V651 NN-V671 NN-V621	NN-V681
Microwave	5	5
Grill	3	3
Combination	3 x 4	3 x 4
Sensor reheat		2
Sensor Cook		6
Sensor Combination		6
Turbo reheat	1	1
Weight reheat	2	-
Weight cook	2	-
Weight combination	10	-
Weight defrost	3	3
Delay/Stand	Yes	Yes
More / Less	-	Yes
Kg - lb/oz	Yes	Yes
Stage cooking	3	3
Clock	12H	12H

Function	NN-V651 NN-V671 NN-V621	NN-V681
Word prompt	English	English

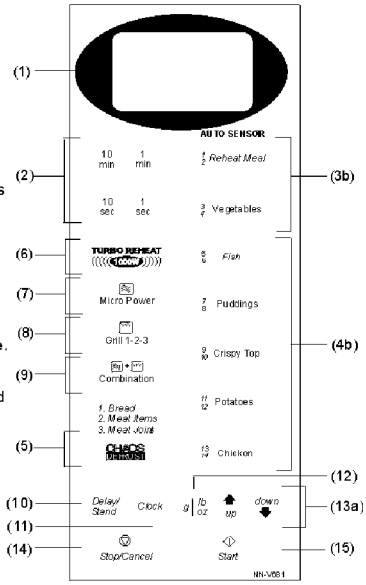
3. Control Panels

NN-V651* / NN-V621* / NN-V671*



(1) **Display Window**
(2) **Time Pads**
(3a) **Auto Weight Microwave Programs**
(3b) **Auto Sensor Microwave Programs**
(4a) **Auto Weight Combination Programs**
(4b) **Auto Sensor Combination Programs**
(5) **Auto Weight Defrost Programs**
(6) **Turbo Reheat Pad**
(7) **Microwave Power Setting**
(8) **Grill Setting**
(9) **Combination Pad**
(10) **Delay/Stand Pad:**
This can be used to delay a cooking program for up to 9 hrs 99 minutes, or used to time standing (non cooking) time.
(11) **Clock Pad:**
Press the clock pad. Set the clock by pressing the minute and second pads. Press the clock pad again to stop the colons flashing.
(12) **Lb/oz Conversion**
(13a) **Weight Selection Pads**
(13b) **More/Less Pads**
(14) **Stop/Cancel Pad:**
Before Cooking:
One press clears your instructions.
During cooking:
One Press temporarily stops the cooking program. Another press cancels all your instructions and the time of the day will appear in the display.
Start Pad:
Press to start operating the oven.
If during cooking the door is opened or Stop/Cancel Pad is pressed once, Start pad has to be pressed again to continue cooking.

NN-V681



4. Operation and digital programmer test procedure

4.1. Setting The Clock

1. Plug the power supply cord into the wall outlet

WELCOME TO PANASONIC REFER
TO OPERATING INSTRUCTIONS

2. Press the clock pad

SET TIME

3. Enter the time of the day

11:25
_ _ PRESS CLOCK

4. Press the clock pad

11 : 25

4.2. Microwave Cooking

1. Place a water load in the oven

2. Press Micro power once to set high power

HIGH
_ _ SET TIME

3. Set time at 10 sec. by pressing
10 sec. pad once

HIGH
10
SEC
_ _ SET TIME

4. Press Micro power pad 3 times to set medium power

MEDIUM
_ _ SET TIME

5. Set pad for 1 minute by pressing 1 min. pad once

MEDIUM
1 00
min sec
_ _ PRESS START

6. Press the start pad

10
sec

7. When the first stage cooking has elapsed oven automatically switches to second stage

8. When second stage cooking has elapsed oven bleeps 5 times and shuts off

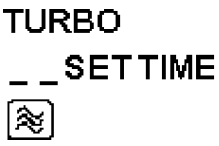
OPEN DOOR

4.3. Turbo Reheat

1. Place water load in the oven

-

2. Press the Turbo reheat button once



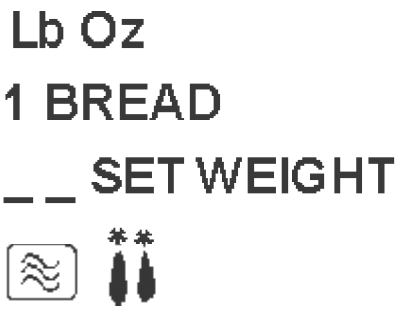
3. Set time to 1 minute by pressing1 min pad once

4. Press the start pad

4.4. Auto Weight Defrost

1. Select the desired program

2. Press g or lb. and oz.



3. Enter the weight by pressing the Up & Down Pads.

4. Press Start

4.5. Delay Stand

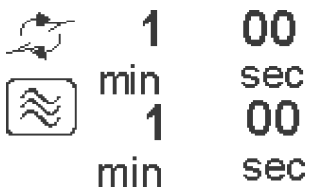
1. Set power level and time

-

2. Press Stand

3. Set standing time

4. Press Start



4.6. Delay Start

1. Press delay

DELAY START
SET TIME

2. Set delay time

1H 00
CHOOSE COOKING MODE

3. Set power level and time

-

4. Press start pad

1H 00

4.7. Grill Operation

1. Select grill power press once for grill 1

GRILL 1
SET TIME

2. Set cooking time

1 00
min sec
GRILL 1
PRESS START

3. Press start

1 00
min sec

4.8. Combination Cooking (Grill And Microwave)

1. Press combination pad

COMBINATION SELECT GRILL LEVEL

2. Press grill pad to select oven temperature

GRILL 1
SELECT MICROPOWER
COMBINATION

3. Select micro power

MEDIUM
SET TIME
COMBINATION
GRILL 1

4. Set cooking time

10 min 00 sec
PRESS START
COMBINATION
GRILL 1
MEDIUM

5. Press start pad

9 59
min sec

4.9. Auto Weight Cook Programs NN-V651 NN-V621 NN-V671

1. Select the desired auto weight cook program

FRESH VEGETABLES

2. Press to select grams or pounds and ounces

LB OZ
FRESH VEGETABLES
SET WEIGHT

3. Enter the weight by pressing the up and down pads

1 LB 0
PRESS START

4. Press Start

8 18
min sec

4.10. Auto Sensor Cooking NN-V681

1. Select the desired sensor cook program

CHILLED MEAL
PRESS START

2. Press start

CHILLED MEAL

4.11. Demonstration Mode

1. Set demonstration mode by pressing the clock pad three times

DEMO MODE
PRESS ANY KEY

2. Cancel demonstration mode by pressing the clock pad three times

11 : 35

4.12. Child Lock

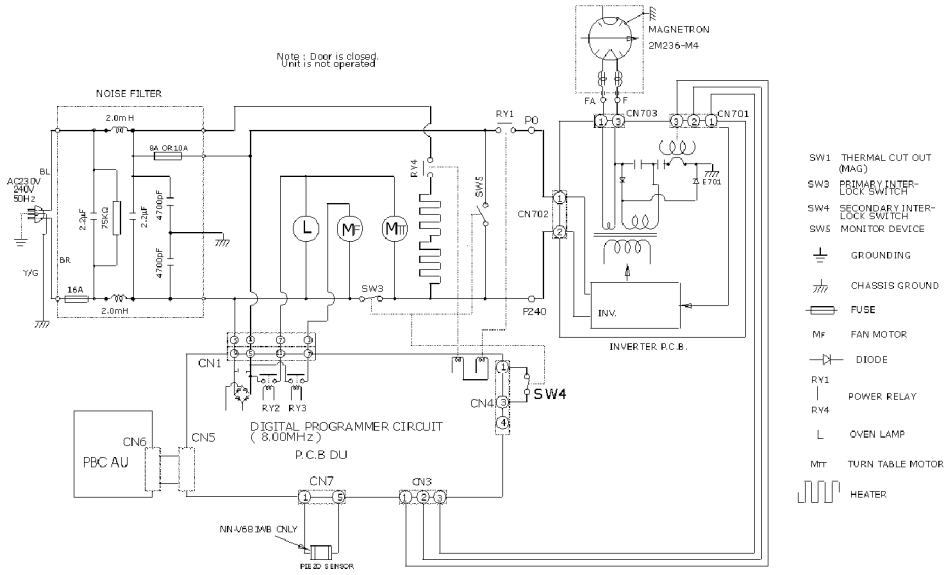
1. Set the child lock by pressing the start pad three times

LOCK

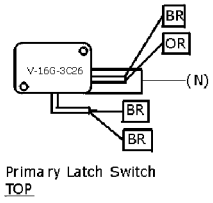
2. Cancel the child lock by pressing the start pad three times

11 : 35

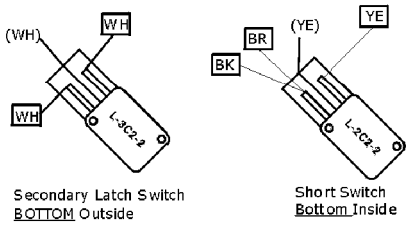
5. Schematic And Wiring Diagram



NOTE: *When replacing, check the lead color as shown.
*Colors shown by () indicate colors of lead wire connector housing.

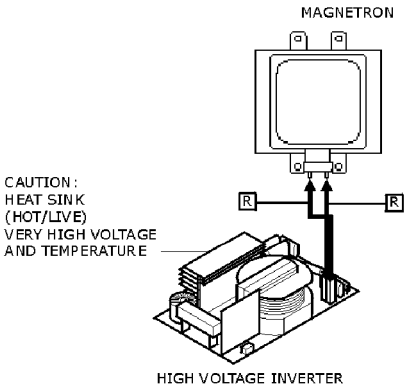


Primary Latch Switch
TOP

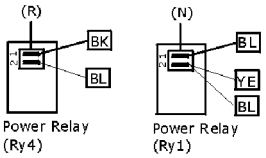


Secondary Latch Switch
BOTTOM Outside

Short Switch
Bottom Inside



HIGH VOLTAGE INVERTER



SYMBOL	COLOUR
BL	BLUE
BK	BLACK
BR	BROWN
WH	WHITE
YE	YELLOW
N	NATURAL
R	RED

6. Description Of The Operating Procedure

6.1. Variable power cooking control

The output power is controlled by the inverter power supply, which is controlled by signals from the digital programmer circuit (DPC). The digital programmer cicruit operates relay RY1 to supply power to the inverter circuit. The outpower is controlled by the inverter control signal from the digital programmer circuit.

Variable power cooking

Setting	Output	On Time	Off Time
Turbo	1000W	22	0
High	900W	22	0
Defrost	440W	16	6
Medium	600W	22	0
Low	440W	22	0
Simmer	440W	15	7
Warm	440W	8	14

NOTE 1. The ON/OFF time ratio does not correspond with the percentage of microwave power since approximately 2 seconds are required to heat the magnetron filament.
NOTE 2. If the microwave cooking time is longer than 3 minutes, the cooling fan will operate for 1 minute to cool the oven and its electronic components.

6.2. Grill Cooking

The digital programmer circuit controls the grill power by operating the power relay RY4 in the sequence shown in the table below.

Duty cycles for Grill Cooking

	Duty ON/OFF	
	ON Time	OFF Time
Grill 1	33”	0”
Grill 2	24”	9”
Grill 3	18”	15”

NOTE 1: After grill cooking, the cooling fan will operate for 1 minute to cool the oven and its electronic components.

6.3. Combination Cooking

Combination cooking is achieved by operating the microwave and grill together during one cooking cycle. The digital programmer circuit controls the ON - OFF time of power relay 4 and the inverter control signal, as shown in the folowing table.

Grill And Microwave Combination Duty Cycles

Grill Heater			Micropower			
	ON	OFF		OUTPUT	ON	OFF
Grill 1	33	0	Medium	600W	22	0
Grill 2	24	9	Low	440W	22	0
Grill 3	18	15	Simmer	440W	15	7
			Warm	440W	8	14

NOTE 1: After grill cooking, the cooling fan will operate for 1 minute to cool the oven and its electronic components.

6.4. Auto weight defrost, Auto weight Cook NN-V651 NN-V621 NN-V671

When an auto control feature is selected and the start pad pressed:

1. The digital programmer circuit determines the power level and the

cooking time and indicates the operating state in the display. The table shows the corresponding cooking times for each category and its respective weight.

2. When the cooking time in the display window has elapsed, the oven turns off automatically via the control signal from the digital programmer circuit.
   Note: After auto cooking if the oven temperature is over the predetermined temperature the fan motor rotates to cool the oven and its components.

Auto Weight Defrost

Category	1st Touch Weight	Cooking Time
Bread	100g	0 Min 50 Sec
Meat Items	150g	2 Min 21 Sec
Meat Joints	400g	7 Min 0 Sec

Auto Weight Cook

Category	1st Touch Weight	Cooking Time
1.Curry	300g	3 Min 46 Sec
2.Chinese Style	250g	3 Min 08Sec
3.Fresh Vegatables	100g	2 Min 21 Sec
4.Fresh Fish	100g	1 Min 10 Sec
5.Jacket Potatoes	200g	9 Min 20 Sec
6.Frozon Potato Products	100g	4 Min 40 Sec
7.Whole Chicken	1000g	19 Min 30 Sec
8.Chicken Portions	200g	8 Min 00 Sec
9.Chilled Pizza	200g	6 Min 50 Sec
10.Frozen Pizza	200g	9 Min 10 Sec
11.Chilled Crispy Top	300g	8 Min 31 Sec
12.Frozen Crispy Top	300g	10 Min 00 Sec
13.Reheat Pastry	100g	2 Min 20 Sec
14.Frozen Baguettes	100g	5 Min 58 Sec

6.5. One touch Auto sensor cooking NN-V681

Auto sensor cook is a revolutionary way to cook by microwave without setting a power level or selecting a time. All that is necessary is to select an auto sensor program before starting to cook. /

Understanding Auto sensor cooking. / As food cooks, a certain amount of steam is produced. If

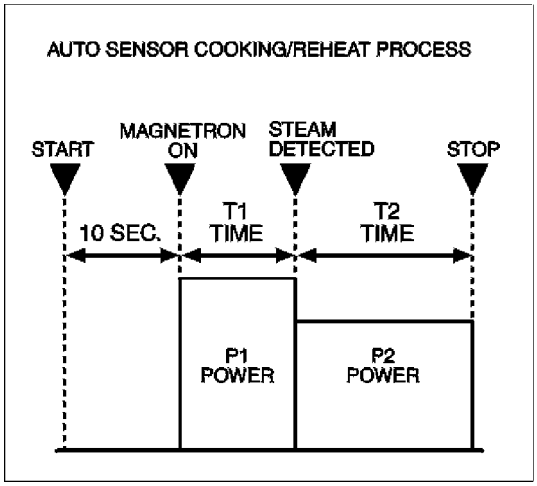
the food is covered, this steam builds up and eventually escapes from the container. In auto sensor cooking, a carefully designed instrument, called the humidity sensor element, senses the escape of steam. then, based upon the auto sensor program selected, the unit will automatically determine the correct power level and the proper length of time it will take to cook the food.
NOTE: Auto sensor cooking is successful with the foods and recipes found in the auto sensor cooking guide. Because of the vast differences in food composition, items not mentioned in the cooking guide should be prepared in the microwave oven using the power select and time features. Please consult variable power microwave cook book for procedures.
/ Explanation of the auto sensor cooking process

1. **During the first 10 second period there is no microwave activity, and when calculating the T2 time by using the formula below make sure this 10 seconds is subtracted from the T1 time. In other words the T1 time starts at the end of the 10 second period.**
2. **T1 Time... The total amount of time it takes the microwave oven to switch to T2 time after the 10 second period.**
3. **T2 Time... When the steam escapes from the cooking container placed in the oven, the steam sensor detects it and the microprocessor calculates the balance of cooking time. This T2 time is then shown on the display and begins counting down.**

Balance of cooking (T2 time)
The balance of cooking time which is called T2 time, can be calculated by the following formula.
/ T2 time (in sec.) = T1 time x K factor
NOTE: Remember, the T1 time starts after the 10 second period. The coefficient K is programmed into the microprocessor memory and they are listed in the following table along with the P1 and P2 powe rs. /
NOTE: When “More” or “Less” pad is selected, the K factor varies resulting in T2 time is either increased or decreased.
Calculating the T2 time
Example 1: If the T1 time is measured to be 2 minutes and 40 seconds after the 10 second period, and the Auto program is selected is Fish:
T2 = T1 x K
= 2 min 40 sec. X. 0.1
= 160 sec. x 0.1
= 16 sec.

Catergory	P1 POWER	P2 POWER	K FACTOR STANDARD
1. Chilled meal	HIGH	HIGH	1.0
2. Frozen meal	HIGH	HIGH	0.8

Figure 1



Auto sensor cooking

7. Cautions to Be Observed When Troubleshooting

Unlike many other appliances, the microwave oven is a high voltage, high current device. Though it is free from danger in ordinary use, extreme care should be taken during repair.

Caution

Servicemen should remove their watches whenever working close to or replacing the magnetron.

7.1. Check the grounding

Do not operate on a two wire extension cord. The microwave oven is designed to be used when grounded. It is imperative, therefore, to ensure the appliance is properly grounded before beginning repair work.

7.2. Inverter Warnings

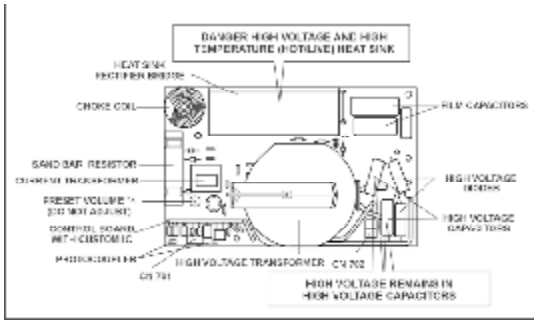
DANGER, HIGH VOLTAGE AND HIGH TEMPERATURE (HOT/LINE) OF THE INVERTER POWER SUPPLY (U)

This high voltage inverter power supply handles very high voltage and current for the magnetron tube. Though it is free from danger in ordinary use, extreme care should be taken during repair. As you can see, it looks like a TV flyback transformer, however, the current is extremely large and is therefore, dangerous due to this high current and high voltage.

The aluminium heat sink is also energized with high voltage (HOT), so do not touch when the AC input terminal is connected. The power devices (Collector) is directly connected to the aluminium heat sink.

The aluminium heat sink may be (HOT) due to heat energy, therefore, extreme care should be taken during servicing.

Figure 1

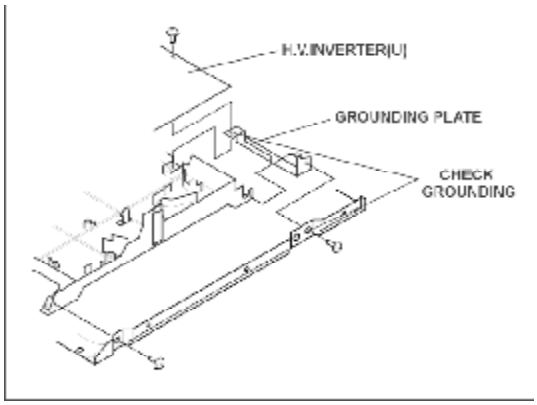


HV Inverter warning

WARNING FOR INVERTER POWER SUPPLY (U) GROUNDING

Check the high voltage inverter power supply circuit grounding. The high voltage inverter power supply circuit board must have a proper chassis ground, the inverter grounding bracket must be connected to the chassis. If the inverter board is not grounded it will expose very high voltages and cause extreme DANGER! Be sure that the inverter circuit is properly grounded via the inverter earth bracket.

Figure 2



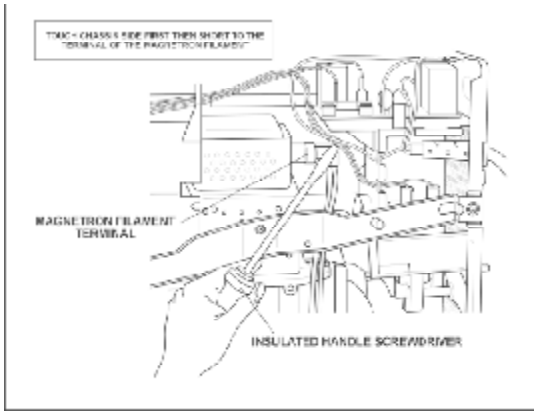
Grounding of the inverter circuit board

WARNING! DISCHARGE THE HIGH VOLATGE CAPACITORS

For about 30 seconds after the oven is turned off, an electric charge remains in the high voltage capacitors in the inverter power supply circuit board.

When replacing or checking parts, remove the power plug from the outlet and short the inverter output terminal of the magnetron filament terminals to the chassis ground with an insulated handle screwdriver to discharge. Please be sure to touch the chassis ground side first and then short to the output terminals.

Figure 3



Discharging the high voltage capacitors

WARNING

There is high voltage present with high current capabilities in the circuits of the primary and secondary windings, choke coil and heat sink of the inverter. It is extremely dangerous to work on or near these circuits with the oven energized. DO NOT measure the voltage in the high voltage circuit including the filament voltage of the magnetron.

WARNING

Never touch any circuit wiring with your hand nor with an insulated tool during operation.

7.3. Part Replacement.

When any part or component is to be replaced, always ensure that the power cord is removed from the wall outlet.

7.4. When the 10A fuse is blown due to the operation of the short switch:

WARNING

When the 10A 250V fuse is blown due to the operation of the short switch, the primary latch switch and short switch must be replaced. It is also important to change the power relay 1 (RY1) when the continuity test shows shorted contacts.

1. **This is mandatory. Refer to “adjustments and measurements” for the location of these switches.**
2. **When replacing the fuse, confirm that it has the appropriate rating for these models.**
3. **When replacing faulty switches, be sure the mounting tabs are not bent, broken or deficient in their ability to hold the switches.**

7.5. Avoid inserting nails, wire etc. through any holes in the unit during operation.

Never insert a wire, nail or any other metal object through the lamp holes on the cavity or any holes or gaps, because such objects may work as an antenna and cause microwave leakage.

7.6. Confirm after repair

1. **After repair or replacement of parts, make sure that the screws of the oven, etc. are neither loose nor missing. Microwaves might leak if screws are not properly tightened.**
2. **Make sure that all electrical connections are tight before inserting the plug into the wall outlet.**
3. **Check for microwave energy leakage. (Refer to procedure for measuring microwave energy leakage).**

CAUTION MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY

IMPORTANT NOTICE

The following components have potentials above 250V while is appliance is operated.

- **Magnetron**
- **High voltage transformer (Located on inverter (U))**
- **High voltage diodes (Located on inverter (U))**
- **High voltage capacitors (Located on inverter (U))**

Pay special attention in these areas.

When the appliance is operated with the door hinges or magnetron fixed incorrectly, the microwave leakage can reach more than 5mW/ cm^3. After repair or exchange, it is very important to check if the magnetron and the door hinges are correctly fixed.

7.7. Sharp Edges

Caution

Please use caution when unpacking, installing or moving the unit, as some exposed edges may be sharp to touch and cause injury if not handled with care.

8. Parts Replacement Procedure

8.1. Magnetron

1. Discharge the high voltage capacitors on the inverter circuit.
2. Remove the screw holding the air guide.
3. Remove the two screws holding the tie bar.
4. Remove the oven lamp and lead wire harness cables form the air guide A.
5. Remove the air guide A.
6. Disconnect the two high voltage leads from the magnetron.
7. Remove the four screws holding the magnetron.

NOTE: After replacing the magnetron, tighten the mounting screws making sure that there is no gap between the waveguide and the magnetron to prevent microwave leakage.

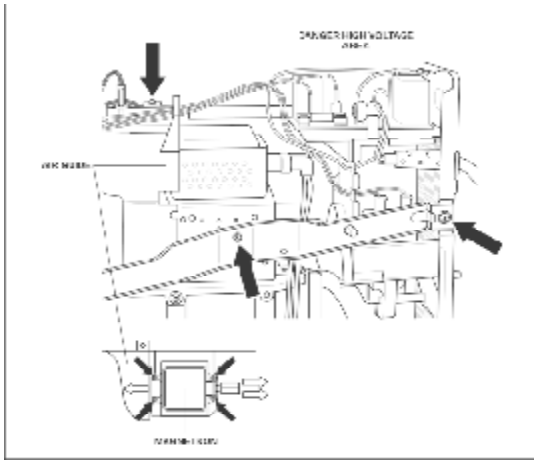
Caution

When replacing the magnetron, ensure that the antenna gasket is in place.

Note

The magnetron used for this model is unique for the inverter power supply system. Make sure to use the one as listed in the parts list.

Figure 1



Removal of the magnetron

8.2. Inverter power supply (U)

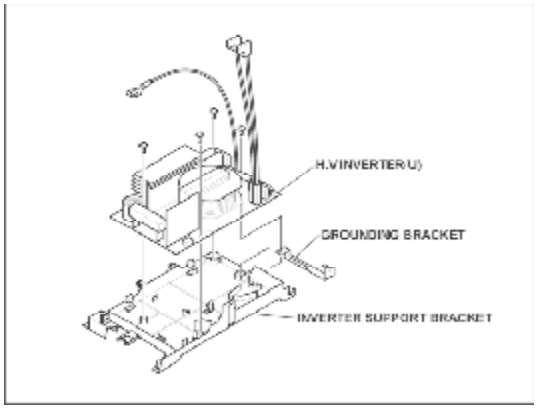
1. Discharge the high voltage capacitors.
2. Remove two screws holding the tie bar.
3. Unplug the H.V. Lead wires from the magnetron.
4. Remove the one screw holding the earth wire to the magnetron.

5. **Remove the connector CN701 and CN702 from the inverter PCB.**
6. **Remove the two screws holding the inverter base to the chassis (See figure 2).**
7. **Carefully remove the inverter PCB and support base from the oven.**
8. **Remove the air guide E by un-clipping the catch hooks.**
9. **Remove the four screws holding the PCB to the inverter support base.**

Caution when replacing the inverter power supply (U)

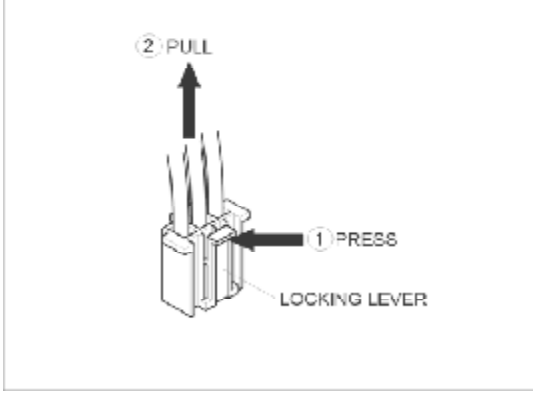
1. **Make sure that grounding plate is in place.**
2. **Securely tighten the grounding screw through the side of the chassis (Base).**
3. **Securely connect the 3 lead wire connectors.**
4. **Make sure that the heat sink has enough space (gap) from the oven. Take care not to touch any lead wire to the aluminium heat sink because it is hot.**

Figure 2



Removal of the inverter PCB.

Figure 3



Disconnecting the PCB lock connector.

8.3. Digital Programmer Circuit (DPC) and membrane key board.

NOTE: Ground any static electric built up on your body before handling the DPC.

1. **Disconnect all connectors from the DPC.**
2. **Remove the two screws holding the escutcheon base and slide the escutcheon base upward slightly. Removal is easier with the door open.**
3. **Release the ribbon cable.**
4. **Remove the six screws holding the DPC DU assembly.**
5. **Remove the door lever.**
6. **Remove the seven screws holding the DPC AU assembly.**

To remove escutcheon pad.

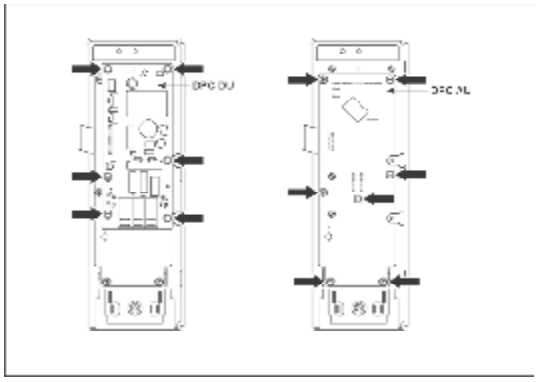
1. **Remove the escutcheon bracket from the escutcheon base by freeing the 4 catch hooks on the escutcheon base.**
2. **Peel away the display window from the inside of the base.**
3. **Remove the membrane assembly by pushing from the inside of the base and then peeling away from the outside surface.**

NOTE:

1. **The escutcheon key board is attached to the escutcheon base with double faced adhesive tape. Therefore, applying hot air such as using a hair dryer is recommended for smoother removal.**
2. **When installing a new escutcheon key board, make sure that the surface of the escutcheon base is cleared sufficiently so that problems such as, shorted contacts and uneven surfaces can be avoided.**

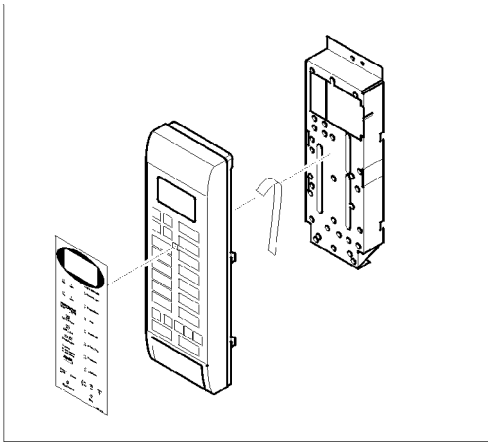
3. **When replacing the silver escutcheon sheet, (NN-V621MB) ensure that the escutcheon sheet is earthed to the back-plate via the earth strip.**
4. **When replacing the stainless escutcheon asemmbly, (NN-V671SB), ensure that the stainless facia is earthed to the escutcheon back plate via the earth spring.**

Figure 4



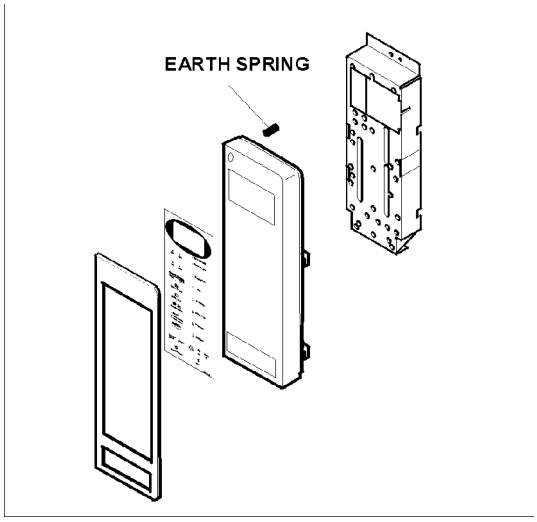
Removal of DPC AU and DPC DU

Figure 5



Grounding of the silver escutcheon

Figure 6



Grounding of the stainless fascia

8.4. Low voltage transformer and/or power relays (RY1)

Note

Be sure to ground your body to discharge any static before handling the DPC.

1. **Using a solder wick or a de-soldering tool and a 30W soldering iron, carefully remove all solder from the terminal pins of the low voltage transformer and/or power relays.**
2. **With all of the terminal pins cleaned and separated from the DPC contacts, remove the defective transformer/power relays and install the new components making sure that the terminal pins are inserted completely. Carefully re solder all terminal contacts carefully.**

Note

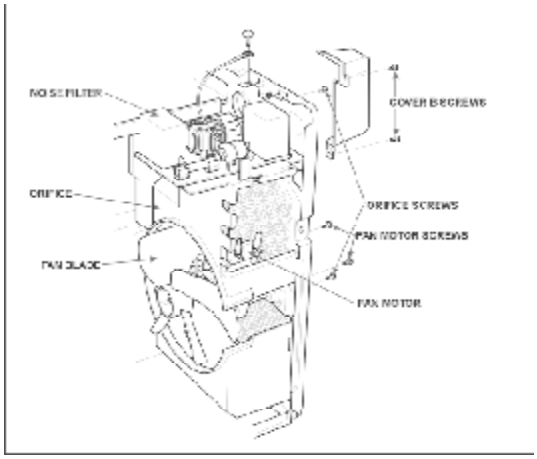
Do not use a soldering iron or de soldering tool of more than 30 watts on DPC contacts

8.5. Fan Motor

1. **Remove two screws and remove the tie bar.**
2. **Disconnect the two lead wires from the fan motor terminals.**
3. **Disconnect all lead wires from the noise filter.**
4. **Remove the noise filter.**
5. **Remove the air guide by removing the two screws.**
6. **Remove the two screws holding the orifice assembly.**

7. Remove the two screws holding the fan motor assembly.
8. Detach the orifice assembly and the fan motor assembly from the oven assembly.
9. Remove the fan blade from the fan motor by pulling outward.

Figure 6



Removing the fan motor.

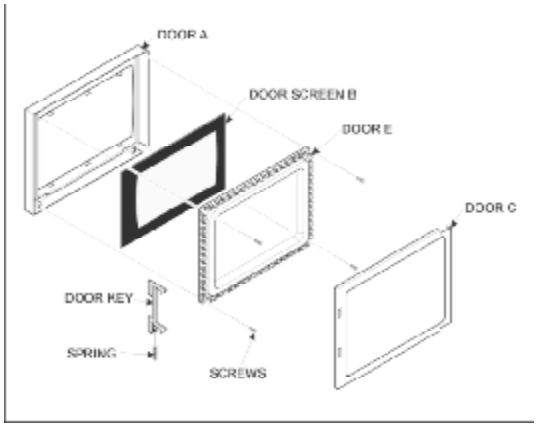
8.6. Door disassembly

1. Remove door C from door E by carefully pulling outward starting from the upper right hand corner using a flat blade screwdriver.
2. Remove four screws holding the door E to the door A assembly.
3. Remove the door screen B by carefully un-clipping the screen from the door A catch hooks. Care must be taken not to damage these hooks during disassembly.
4. Remove the door key and spring from the door E.

After replacement of the defective component parts of the door, reassemble and follow the instructions below for proper installation and adjustment so as to prevent excessive microwave leakage.

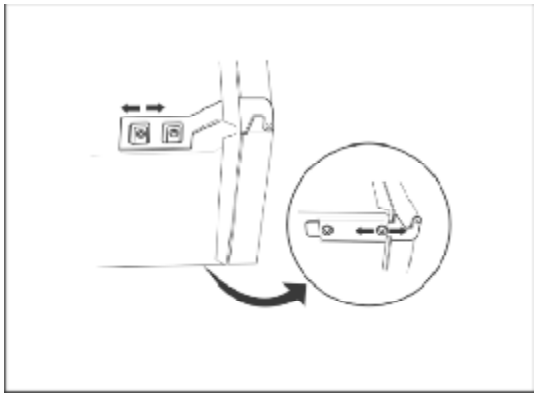
1. When mounting the door to the oven, be sure to adjust the door parallel to the bottom line of the oven face plate by moving the upper hinge in the direction necessary for proper alignment.
2. Adjust so that the door has no play between the inner door surface and the oven front surface. If the door assembly is not mounted properly, microwave power may leak from the clearance between the door and oven.
3. Perform the microwave leakage test.

Figure 7



Disassembly of the door.

Figure 8



Adjusting the door hinge.

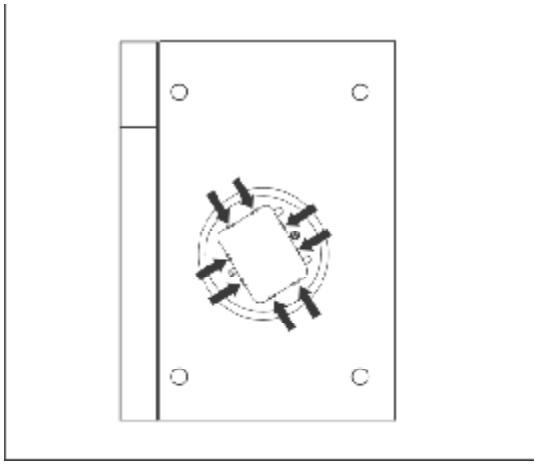
8.7. Turntable Motor

1. **Remove the motor cover by breaking off at the 8 spots indicated by the arrows.**
2. **Disconnect the two lead wires connected to the turntable motor.**
3. **Remove the turntable motor by removing the two screws.**

Note: After breaking off the motor cover, make sure that cut-off portions are properly trimmed off or bent inside so that no sharp edges are exposed.

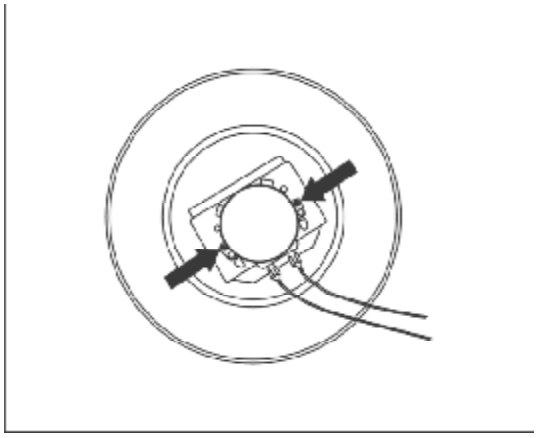
Note: To secure the motor cover use a 4 x 6 screw.

Figure 9



Removing the turntable motor cover.

Figure 10



Removing the two scews fixing the turntable motor.

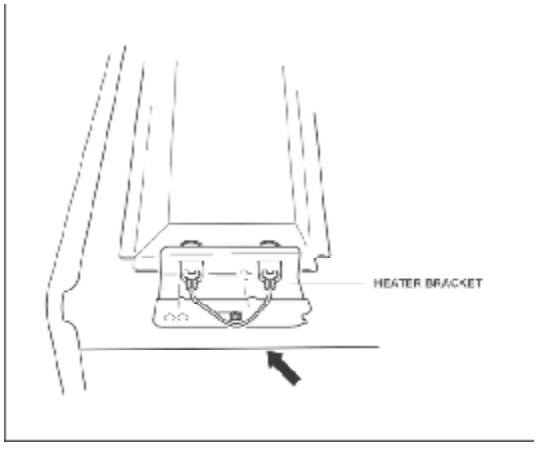
8.8. Quartz Heater

1. Disconnect the lead wires from the heater terminals.

2. Remove one screw holding the heater supports.

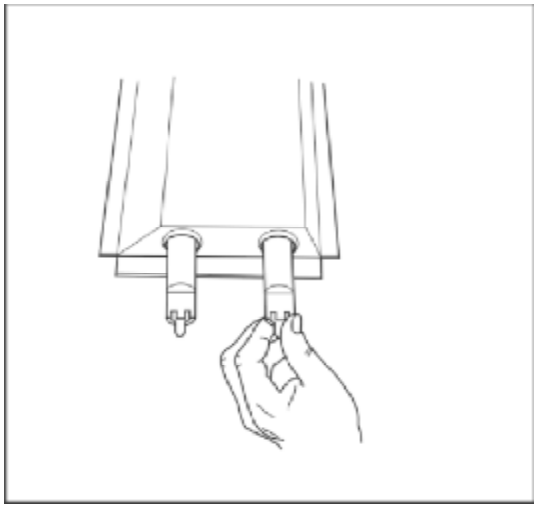
3. Remove the heater.

Figure 11



One screw to remove the grill bracket.

Figure 12

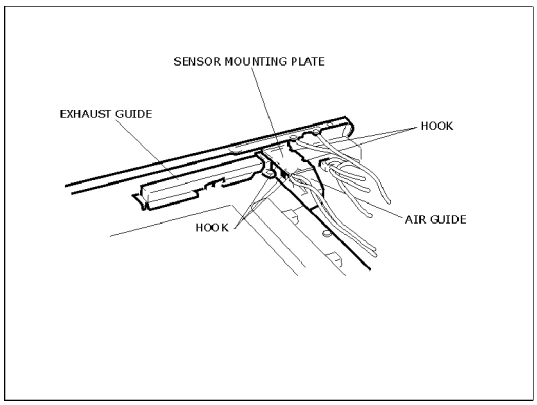


Removing the grill element.

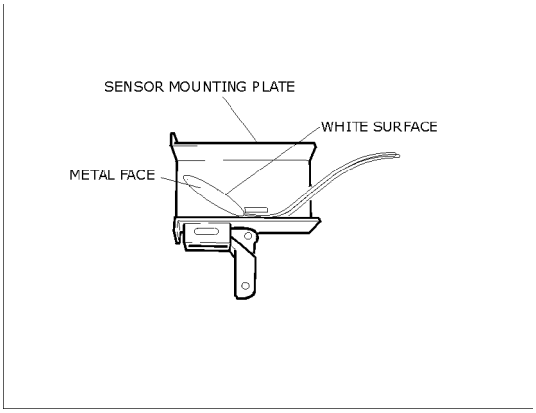
8.9. Steam Sensor NN-V681

1. **Remove 1 screw holding the steam sensor unit**
2. **Disconnect CN7 connector for the digital programmer circuit board.**
3. **Remove the exhaust guide from the steam sensor unit.**
4. **Remove the catch hooks on the sensor mounting plate and air guide.**
5. **Remove the steam sensor from the sensor mounting plate**

NOTE: When installing the steam sensor, make sure that the direction of the steam sensor is as shown in the figure 13.



Removing the steam sensor



Fitting the new sensor

9. Component Test Procedure

Caution

1. **High voltage is present at the high voltage terminal of the inverter unit, including the aluminium heat sink.**
2. **It is not necessary or advisable to attempt to measure this high voltage.**
3. **Before touching any oven components, or wiring, always unplug the oven from its power source and discharge the high voltage capacitors.**

9.1. Primary Latch Switch, Secondary Latch Switch and power relay B interlocks.

1. **Unplug the lead connectors to power relay B and verify the continuity of the power relay B 1-2 terminals.**
2. **Unplug the lead connectors to the primary latch switch and secondary latch switch.**
3. **Test the continuity of the switches with the door open and closed with an ohm meter on the lowest scale.**
   Normal continuity readings should be as followed.

	Door Open	Door Closed
Primary Latch Switch	infinite Ω (Open)	0 Ω (Close)
Secondary Latch switch	infinite Ω (Open)	0 Ω (Close)
Power relay B	infinite Ω (Open)	infinite Ω (Close)

9.2. Short Switch and Monitor Circuit

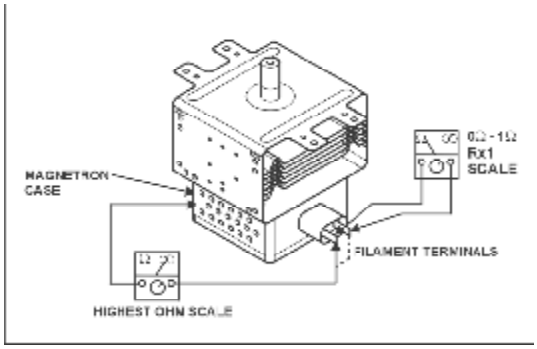
1. Unplug the lead wires from the HV inverter primary terminals.
2. Connect the test probes of the ohm meter to these leads.
3. Test the continuity of the short switch with the door open and the door closed using the lowest ohm scale.

	Door Open	Door Closed
Monitor switch	0 Ω	infinite Ω

9.3. Magnetron

Continuity checks can only indicate an open filament or a shorted magnetron. To diagnose an open filament or shorted magnetron.

1. Isolate the magnetron from the circuit by disconnecting the HV leads.
2. A continuity check across the magnetron filament terminals should indicate one ohm or less.
3. A continuity check between each filament terminal and the magnetron case should read open.



9.4. Push Button Keyboard

Check the continuity between the switch terminals, by tapping an appropriate pad on the keyboard. The keypad matrix is shown on P.29.

9.5. Inverter Power Supply

Caution

DO NOT try to repair this inverter power supply). Replace as a whole H.V. Inverter Unit.

Inverter Power Supply Diagram

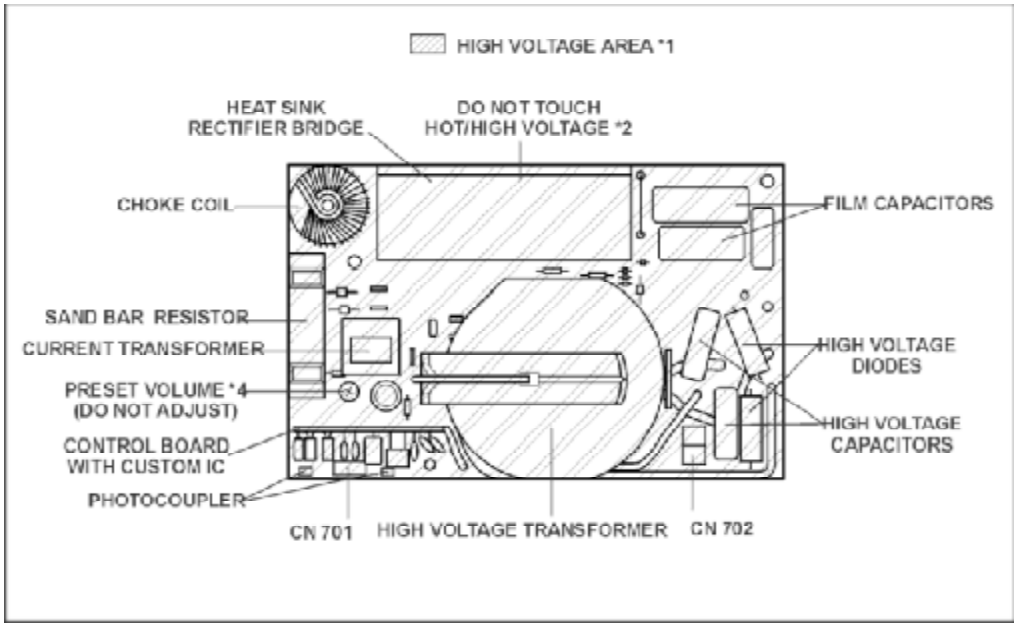


Figure 3

9.6. Inverter Power Supply Unit

Warning

Do not attempt to make any measurements in the high voltage circuitry of the inverter or magnetron.

See troubleshooting of the inverter circuit and magnetron on P.20 to determine if the inverter power supply is still functioning.

9.7. Steam Sensor and Digital Programmer circuit

Caution

Do not touch any parts of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel. Always ground yourself while working on this panel to discharge any static from your body.

In order to detemine if the steam sensor programe of the digital programmer circuit is in working order, do the following test.

1. **Place a water load (150cc) inn the oven**
2. **Set the Auto sensor program 5 fish.**
3. **Tap the Start pad**
4. **Steam Sensor detects steam about 1 minute and 30 seconds to four minutes after the start pad is pressed.**
5. **T1 cooking switches the cooking time T2.**
6. **The cooking time T2 appears in the display window. If the following times appear the steam sensor is functioning normally.**

T1 TIME	T2 TIME
1 MIN 30 SEC - 4 MIN	8 SEC - 23 SEC

10. Measurements and Adjustments

Warning

- For continued protection against radiation hazard, replace only with identical parts.
- When the 10 amp fuse is blown due to the operation of the short switch, you must replace the primary latch switch and short switch. Then follow the installation procedures below.
- Interlock switch replacement - In replacing faulty switches, be sure mounting tabs are not bent, broken or otherwise deficient in their ability to hold the switches.
- Refer to the schematic and wiring diagram to ensure proper connection.

10.1. Installation of primary latch switch, secondary latch switch and short switch.

1. When mounting the primary latch switch, secondary latch switch and short switch to the door hook assembly. Follow the instructions in figure 1.
   NOTE: No specific adjustment during the insulation of each switch into the door hook is necessary.
2. When mounting the door hook assembly to the oven assembly, adjust the door hook assembly by moving it in the direction of the arrow in figure 1. Ensuring the door does not have any play in it. Check for play by pulling the door assembly. Make sure that the latch keys move smoothly after adjustment is completed. Completely tighten the screws holding the door hook assembly to the oven assembly.
3. Reconnect the short switch, primary switch and secondary latch switches and check the continuity of the monitor circuit and latch switches by following the component test procedures on page 17.

10.2. Measurement of microwave output

The output power of the magnetron can be determined by performing the IEC standard test. However, due to the complexity of the IEC test procedures, it is recommended to test the

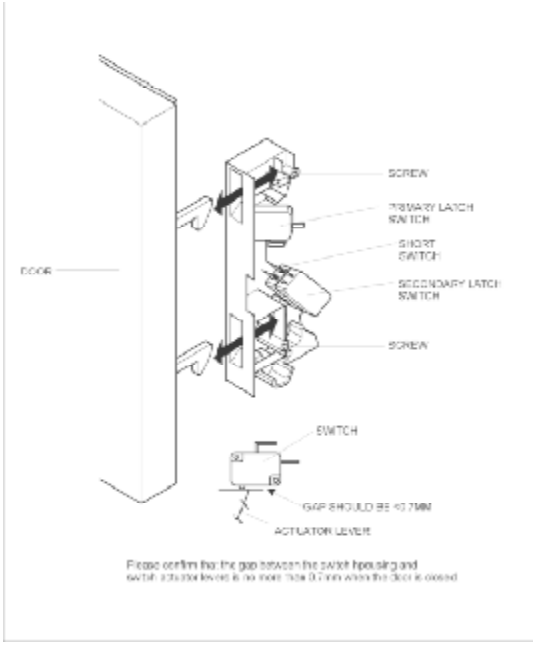
magnetron using the simple method outlined below.
Necessary equipment:

- **1 liter beaker.**
- **Glass thermometer.**
- **Wrist watch or stop watch.**

NOTE: Check the line voltage under load. Low voltage will lower the magnetron output. Take the temperature readings and heating time as accurate as possible.

1. **Fill the beaker with exactly one liter of tap water. Stir the water using the thermometer and record the waters temperature (Record as T1).**
2. **Place the beaker on the center of the glass cook plate.**
3. **Operate the Microwave for 1 Minute on FULL power.**
4. **Stir the water again and read the temperature of the water. (Record as T2).**
5. **The normal temperature rise at the high power position for each model is shown in the table.**

Figure 1



Adjustment of latch switch assembly

RATED OUTPUT	TEMPERATURE RISE
1000W	8°C

11. Troubleshooting guide

Caution

1. **Do not try to repair this H.V. Inverter power supply. Replace as a whole unit. When returning the inverter unit pack in the original inverter box.**
2. **Do not adjust the preset volume on the H.V. Inverter. It is very dangerous to repair or adjust without sufficient test equipment, this circuit handles very high violate and current.**
3. **Ensure a good ground connection before beginning any troubleshooting.**
4. **Be careful of the high voltage circuit and take necessary precautions when troubleshooting.**
5. **Discharge the high voltage capacitors on the inverter.**
6. **When checking the continuity of the components on the H.V. inverter circuit, disconnect one lead wire from these parts and then check the continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter. When disconnecting a plastic connector from a terminal, you must hold the plastic connector and not the lead wire, otherwise the lead wire may become open circuit.**
7. **Do not touch any parts of the circuitry on the digital programmer circuit, since static electric discharge may damage this control panel.**
   Whilst working on this board ensure that your body is connected to ground to discharge any static charge.
8. **240 VAC is present on the digital programmer circuit. (Terminals of the power relays and the primary circuit of the low voltage transformer). When troubleshooting, be cautious of possible electric shock.**

Before troubleshooting, operate the microwave oven following the correct operating procedures in the instruction manual in order to find the exact cause of any trouble, since operator error may be mistaken for the ovens malfunction.

Figure 1

	SYMPTOMS	CAUSE	CORRECTIONS
1.	Oven is dead. Fuse is OK. No display and no operation at all.	1. Open or loose lead wire harness. 2. Open low voltage transformer 3. Defective DPC AU or DPC DU	
2.	Oven does not accept key input (Program).	1. Key input is not in sequence. 2. Shorted push button on DPC AU. 3. Defective DPC AU.	Refer to operation procedure. Refer to DPC troubleshooting.
3.	Oven lamp and turntable motor turn on when oven is plugged in with door closed	1. Misadjustment or loose wiring of secondary latch switch. 2. Defective secondary latch switch	Adjust door and latch switches.
4.	Timer starts countdown but no microwave oscillation. (No heat while oven lamp and fan motor turn on)	1. Off-alignment of latch switches 2. Open or loose connection of high voltage circuit especially magnetron filament circuit NOTE: Large contact resistance will bring lower magnetron filament voltage and cause magnetron to have lower output and/or be intermittent. 3. Defective high voltage component H.V. Inverter NEW H.V. Magnetron 4. Open or loose wiring of power relay (RY1) 5. Defective primary latch switch. 6. Defective power relay RY1 or DPC AU or DU.	Adjust door and latch switches. Check high voltage component according to component test procedure and replace if it is defective. Refer to DPC troubleshooting.
5	No operation of grill elements	1. Defective grill element 2. Defective power relay (RY4). 3. Defective DPC	

Troubleshooting (No Operation)

Figure 2

	SYMPTOMS	CAUSE	CORRECTIONS
1.	No display and no operation at all. 10A Fuse is blown.	1. Shorted lead wire harness 2. Defective primary latch switch (NOTE 1) 3. Defective short switch (NOTE 1) 4. Defective Inverter power supply (U) NEW H.V. Refer to component test procedure	Check adjustment of primary, secondary latch switch and short switch including door.
		NOTE 1: All of these switches must be replaced at the same time. (Refer to adjustment instructions.) Check continuity of power relay Bis contacts (between 1 and 2) and if it has continuity, replace power relay B also.	
2	16A fuse is blown	1. Shorted lead wire harness 2. Shorted grill element	

Troubleshooting (Fuse is blown)

Figure 3

	SYMPTOMS	CAUSE	CORRECTIONS
1	Microwave output is low. Oven takes longer time to cook food.	1. Decrease in power source voltage 2. Open or loose wiring of magnetron filament circuit. (Intermittent oscillation) 3. Aging change of magnetron.	Consult electrician Refer to output test procedures by water temperature raising test.
2	Loud buzzing noise can be heard.	1. Loose fan and fan motor	
3	Turntable motor does not rotate.	1. Open or loose wiring of turntable motor 2. Defective turntable motor	
4	Oven stops operation during cooking.	1. Open or loose wiring of primary and secondary latch switch	Adjust door and latch switches.
5	Oven returns to plug in mode 9 seconds after the start pad is pressed in sensor cooking mode.	1. Open steam sensor circuit 2.. Defective steam sensort	NN-V681

Troubleshooting (Other problems)

Figure 4

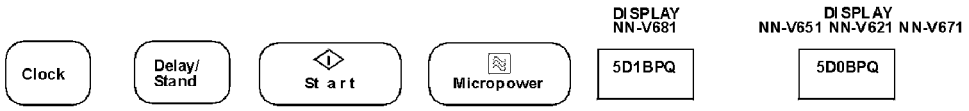
Troubleshooting of Inverter Circuit (U) and Magnetron **NEW H.V.**

Oven shuts down after approximately 15 or 33 seconds.

If the microwave oven shuts down after a short time in micropower mode, conduct the following test.

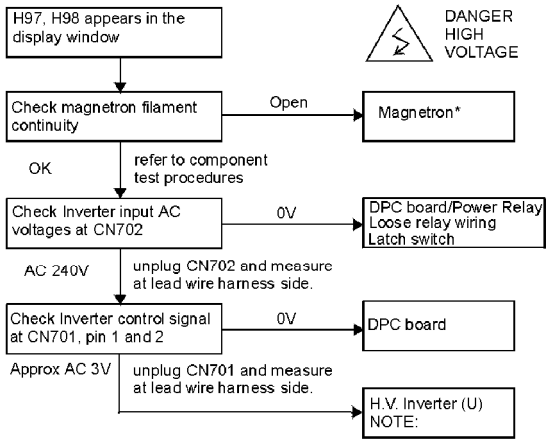
The microwave oven must be set in test mode to activate the self diagnostic failure code system.

SELF TEST MODE



When oven is set in test mode place water load in oven, set micropower to high and time to 1 minute, press start.

H97, H98 appears in display window a short time after start key is pressed and there is no microwave oscillation.



NOTE: DO NOT try to REPAIR this Inverter Power Supply(U) and also DO NOT RE-ADJUST PRESET VOLUME on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.

*Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

Troubleshooting Inverter by Input out voltage

Figure 5

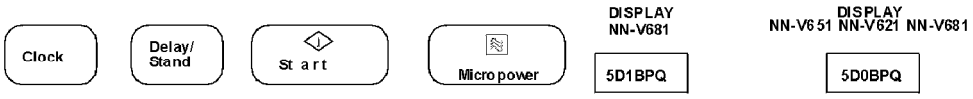
Alternative way to troubleshooting oven with AC Ampare meter used. **NEW H.V.**

Oven shuts down after approximately 15 or 33 seconds.

If the microwave oven shuts down after a short time in micropower mode, conduct the following test.

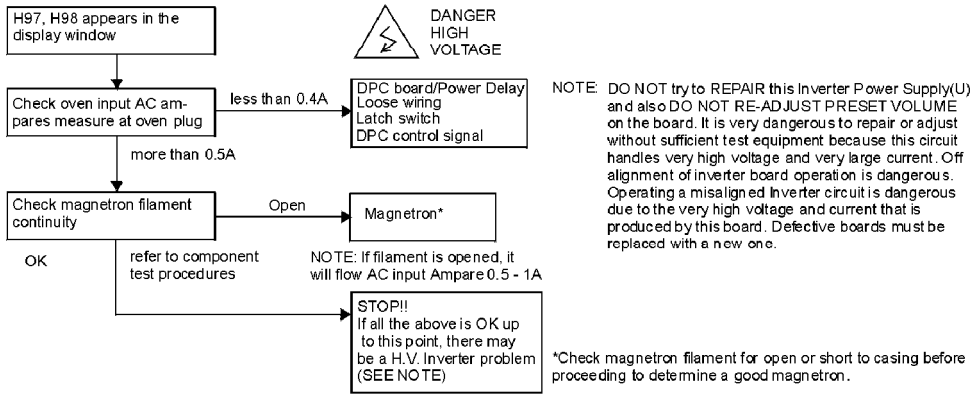
The microwave oven must be set in test mode to activate the self diagnostic failure code system.

SELF TEST MODE



When oven is set in test mode place water load in oven, set micropower to high and time to 1 minute, press start.

H97, H98 appears in display window a short time after start key is pressed and no microwave oscillation with AC Ampare meter used for troubleshooting.


H97, H98 appears in the display window
DANGER HIGH VOLTAGE
Check oven input AC amperes measure at oven plug
less than 0.4A
DPC board/Power Delay
Loose wiring
Latch switch
DPC control signal
more than 0.5A
Check magnetron filament continuity
Open
Magnetron*
OK
refer to component test procedures
NOTE: If filament is opened, it will flow AC input Ampare 0.5 - 1A
STOP!!
If all the above is OK up to this point, there may be a H.V. Inverter problem (SEE NOTE)
NOTE: DO NOT try to REPAIR this Inverter Power Supply(U) and also DO NOT RE-ADJUST PRESET VOLUME on the board. It is very dangerous to repair or adjust without sufficient test equipment because this circuit handles very high voltage and very large current. Off alignment of inverter board operation is dangerous. Operating a misaligned Inverter circuit is dangerous due to the very high voltage and current that is produced by this board. Defective boards must be replaced with a new one.
*Check magnetron filament for open or short to casing before proceeding to determine a good magnetron.

Troubleshooting Inverter by Microwave Oven Input Current

12. Digital Programmer Circuit Troubleshooting Guide

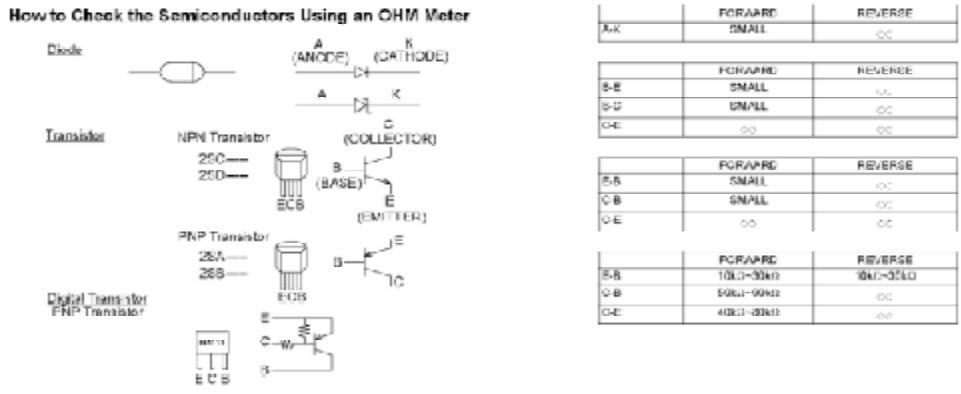
Trouble Related to Digital Programmer Circuit

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No display when oven is first plugged in. Oven is dead.	1	Fuse pattern of DPC	Normal	STEP 2
			Open (NOTE)	Shorted Circuit of ZNR, L.V.T., Oven Lamp etc. Replace DPC
	2	IC10 Pin 9 (12V line)	Abnormal 0V	IC10
			Normal 12V	→ Step 3
	3	IC-1 Pin73voltage (Emitter of Q10)	Abnormal	ZD10, Q10, Ribbon Cable
			Normal = 5V	→ Step 4
	4	IC-1 pin 27 voltage (15 pin of IC220)	Abnormal	IC-220
			Normal	→ IC-1, CX1

NOTE
Procedure of fuse pattern repairing is as follows:
1. When the fuse pattern (PF2) opens.
(1) Remove the jumper wire (PF3).
(2) Insert the removed jumper wire (PF3) to i(PF2)î position and solder it. If both iPF2î and iPF3î fuse patterns are open, ple ase replace DPC.
NOTE: * At the time of these repairs, make visual inspection of the varistor for burning damage and examine the transformer wit h tester for the presence of layer short-circuit (check primary coil resistance).
If any abnormal condition is detected, replace the defective parts.

SYMPTOM	STEP	CHECK	RESULT	CAUSE/CORRECTIONS
No key input	1	Push button switch	Abnormal	Push button switch
			Normal	IC-1
No beep sound	1	IC-1 pin 12, voltage	Abnormal	IC-1
			Normal	IC220, BZ310
Power relay A(RY-2) does not turn on even though the program has been set and the start pad is tapped.	1	IC-1 pin 23voltage while operation	Abnormal	IC-1
			Normal = 5V	→ Step 2
	2	Short circuit between pin 6 and pin 16 of IC-2	Still not turn on	RY-2
			RY-2 turns on	IC-220
No microwave oscillation at any power setting.	1	IC-1 pin 18 and 16 voltages while operation at high power	Abnormal	IC-1
			Normal 18–5V,16---5V	→ Step 2
	2	Q221 transistor	Abnormal	Q221
			Normal	IC220, Q226, RY1
No Grill Operation at any power setting.	1	IC-1 pin 18 and 17 voltages while operation at high power	Abnormal	IC-1
			Normal 18–5V,17---5V	→ Step 2
	2	Q222 transistor	Abnormal	Q222
			Normal	IC220, Q226, RY4
Dark or unclear display	1	Replace display and check operation	Normal	DISPLAY
			Abnormal	IC-1
Missing or lighting of unnecessary segment	1	Replace IC-1 and check operation	Normal	IC-1
			Abnormal	DISPLAY
Oven shuts down on Micropower after a short time (set in test mode) (set high power 1 Min) H97/H98 appears in window and oven stops operation. Program High power for 1 minute and conduct following test quickly, unless H97/H98 appears and oven stops. NEW H.V.	1	Unplug CN702(2 pin) connector and measure voltage between terminals	0V	1. Latch switch 2. DPC/Power relay
			AC line voltage of 240V	→ Step 2
	2	Unplug CN701(3 pin) connector and measure pin 1 voltage	0V	1. DPC
			Approx. AV 3V	1. Magnetron 2. Inverter

Figure 2



How to test the semiconductors

13. Main Parts List

1. Part numbers are indicated on most mechanical parts. Please use these part numbers for part orders. Do not use the description of

the part.

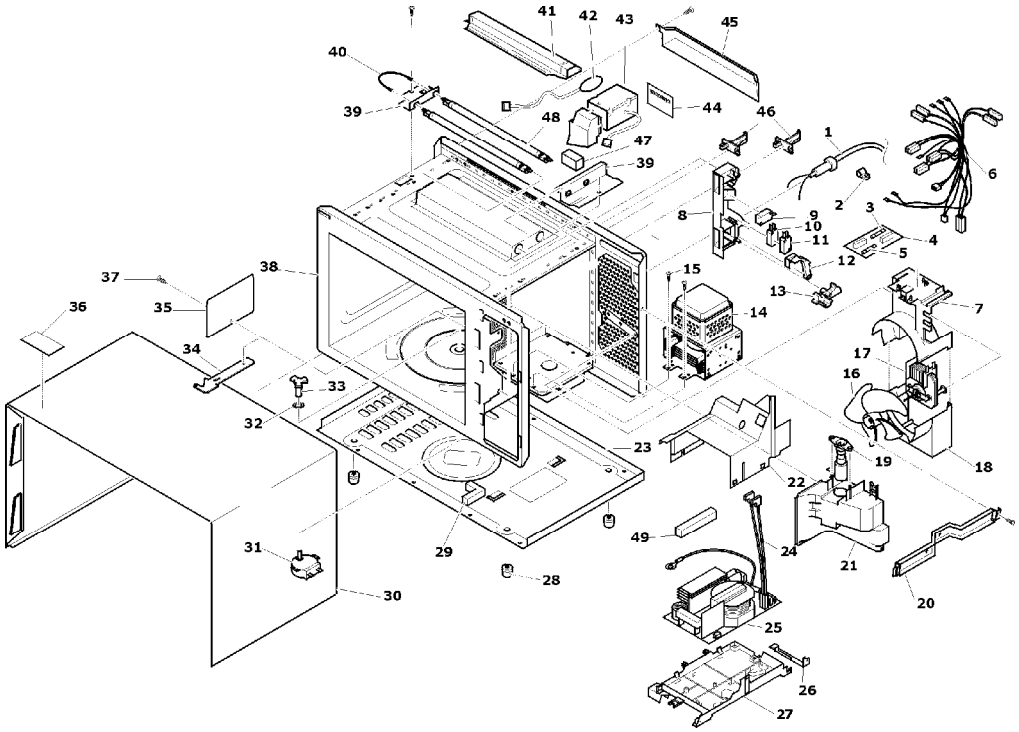
Important safety notice

1. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturers specified parts.

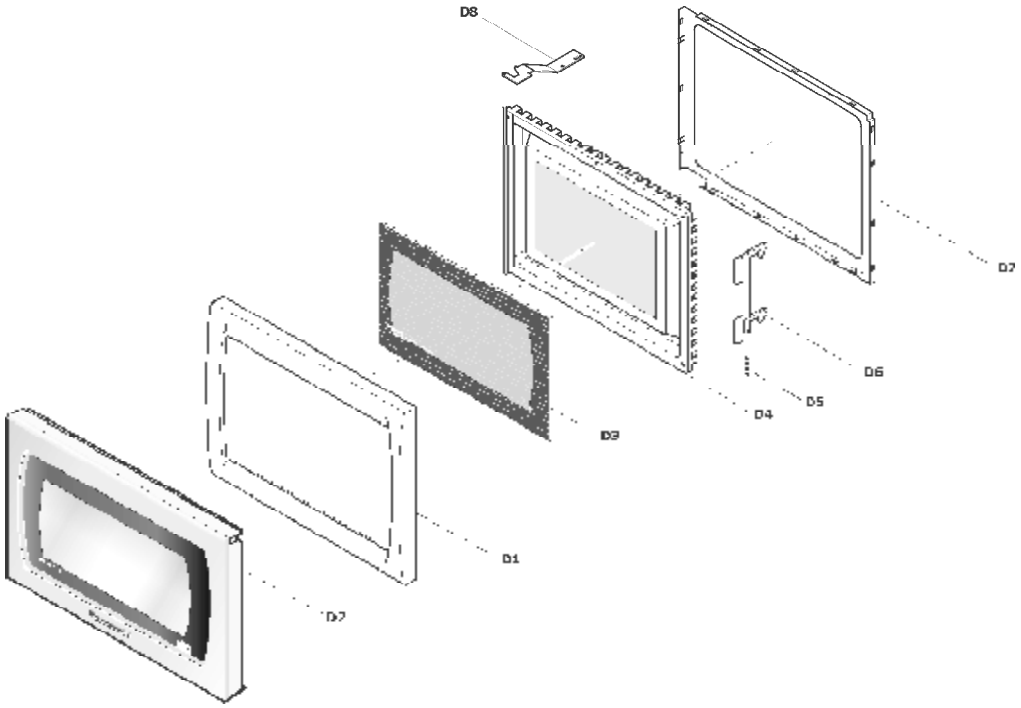
Ref. No.		Part Number	Part Name and Description	Qty	Remarks
1	⚠	E900C6520BP	POWER SUPPLY CORD	1	
2		AEE9108A20GN	POWER CORD CLIP	1	
3	⚠	ANE6230P10GN	FUSE 16A	1	
4	⚠	E607X4N30BP	NOISE FILTER	1	
5	⚠	E67597550GP	CERAMIC FUSE 10A	1	
6	⚠	E030A5D00BP	LEADWIRE HARNESS	1	
7		E41444N30BP	UPPER ORIFICE	1	
8		E30208000BP	DOOR HOOK	1	
9	⚠	E6142-1450	PRIMARY LATCH SWITCH	1	V-16G-3C26-M
10	⚠	E61785180AP	SHORT SWITCH	1	L-2C2-2
11	⚠	E61425180AP	SECONDARY LATCH SWITCH	1	L-3C2-2
12		E31384830AP	HOOK SPACER C	1	
13		E31374830AP	HOOK SPACER B	1	
14	⚠	2M236-M42G	MAGNETRON	1	
15		XTWANE4+12B	SCREW	4	
16		E4008-1640	FAN BLADE	1	
17	⚠	E400A4760JP	FAN MOTOR	1	
18		E42094N30BP	LOWER ORIFICE	1	
19	⚠	E610T5D00BP	OVEN LAMP UNIT	1	
20		E20994N30BP	REINFORCEMENT BRACK	1	
21		E40254N40GS	AIR GUIDE A	1	
22		E40474V00BP	AIR GUIDE E	1	
23		E10014N30BP	BASEPLATE	1	
24	⚠	E030E4N30BP	HV LEADWIRE	1	
25	⚠	E606Y4V00BP	INVERTER	1	
26		E66014V00BP	INVERTER EARTH BRACKET	1	
27		E65854V00BP	INVERTOR SUPPORT BRACKET	1	
28		E1008-1180	RUBBER FOOT	4	
29		E09020000AH	CUSHION RUBBER	1	
30		E110D5D20HBP	OUTER PANEL	1	NN-V681WB NN-V651WB
30		E110D5V00SBP	OUTER PANEL	1	NN-V671SB
30		E110D5V00NBP	OUTER PANEL	1	NN-V621MB
30		E110D4V00BP	OUTER PANEL	1	NN-V651CB
31	⚠	E63268960JP	TT MOTOR	1	
32		AEE2177-F80	PULLEY SHAFT WASHER	1	
33		E21315870GP	PULLY SHAFT	1	
34		E30074L00GS	BOTTOM HINGE	1	
35		E20554L00GS	COVER A	1	
36		E01507550BP	WHITE WARNING LABEL	1	NN-V681WB NN-V651WB
36		E01057560BP	BROWN WARNING LABEL	1	NN-V671SB NN-V621MB NN-V651CB

Ref. No.		Part Number	Part Name and Description	Qty	Remarks
37		XST4+W5V	SCREW	1	
38		E200A4N50BP	OVEN CAVITY	1	NN-V681WB
38		E200A4N30BP	OVEN CAVITY	1	NN-V671SB NN-V621MB NN-V651WB NN-V651CB
39		E64604N30BP	HEATER SUPPORT BRACKET	2	
40		E03594N30GP	LEADWIRE GRILL LINK	1	
41	⚠	E64504N50BP	SENSOR COVER B	1	NN-V681WB
42	⚠	E607S7050AP	STEAM SENSOR	1	NN-V681WB
43	⚠	E407F8010BP	STEAM SENSOR ASSY	1	NN-V681WB
44		E00064080BP	WARNING LABEL	1	
45		E40244N30BP	EXHAUST GUIDE	1	
46		E11405840GP	STOPPER A	2	
47		E09250000BD	CUSHION RUBBER	2	NN-V681WB
48	⚠	E630G8000BP	QUARTZ HEATER	2	
49		E09230000AD	CUSHION RUBBER	1	

14. Exploded View



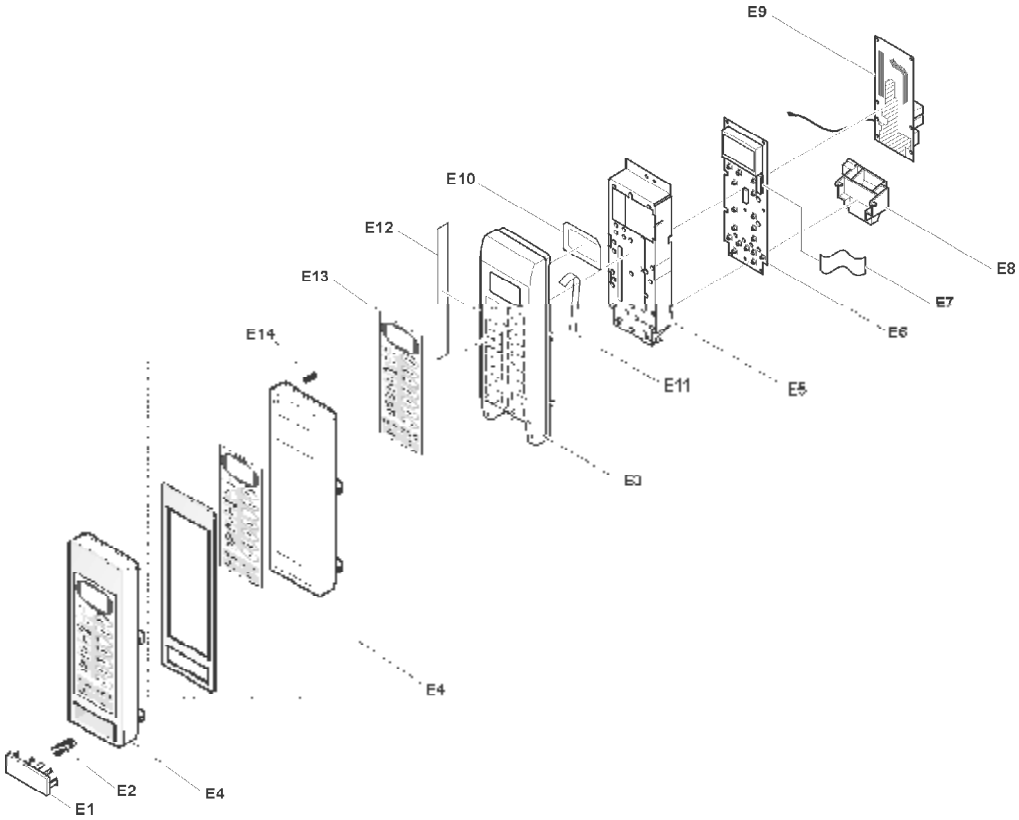
15. Door Assembly



Ref. No.		Part No.	Part Name & Description	Remarks	Part No.
D1		E30014N30HBP	DOOR A	1	NN-V681WB NN-V651WB
D1		E30014N30NBP	DOOR A	1	NN-V621MB
D1		E30014N30BP	DOOR A	1	NN-V651CB
D2		E302A4N30SBP	DOOR A ASSEMBLY	1	NN-V671SB
D3		E31464N30BP	DOOR SCREEN B	1	NN-V681WB NN-V621MB NN-V651WB NN-V651CB
D4	⚠	E302K4N30BP	DOOR E ASSEMBLY	1	
D5		E30214000AP	DOOR KEY SPRING	1	
D6		E30184L00GS	DOOR KEY	1	
D7		E30854N30BP	DOOR C	1	
D8		E30064N30BP	UPPER HINGE	1	

NOTE: When ordering any Door component also order door C as this part may become damaged during disassembly.

16. Escutcheon Base

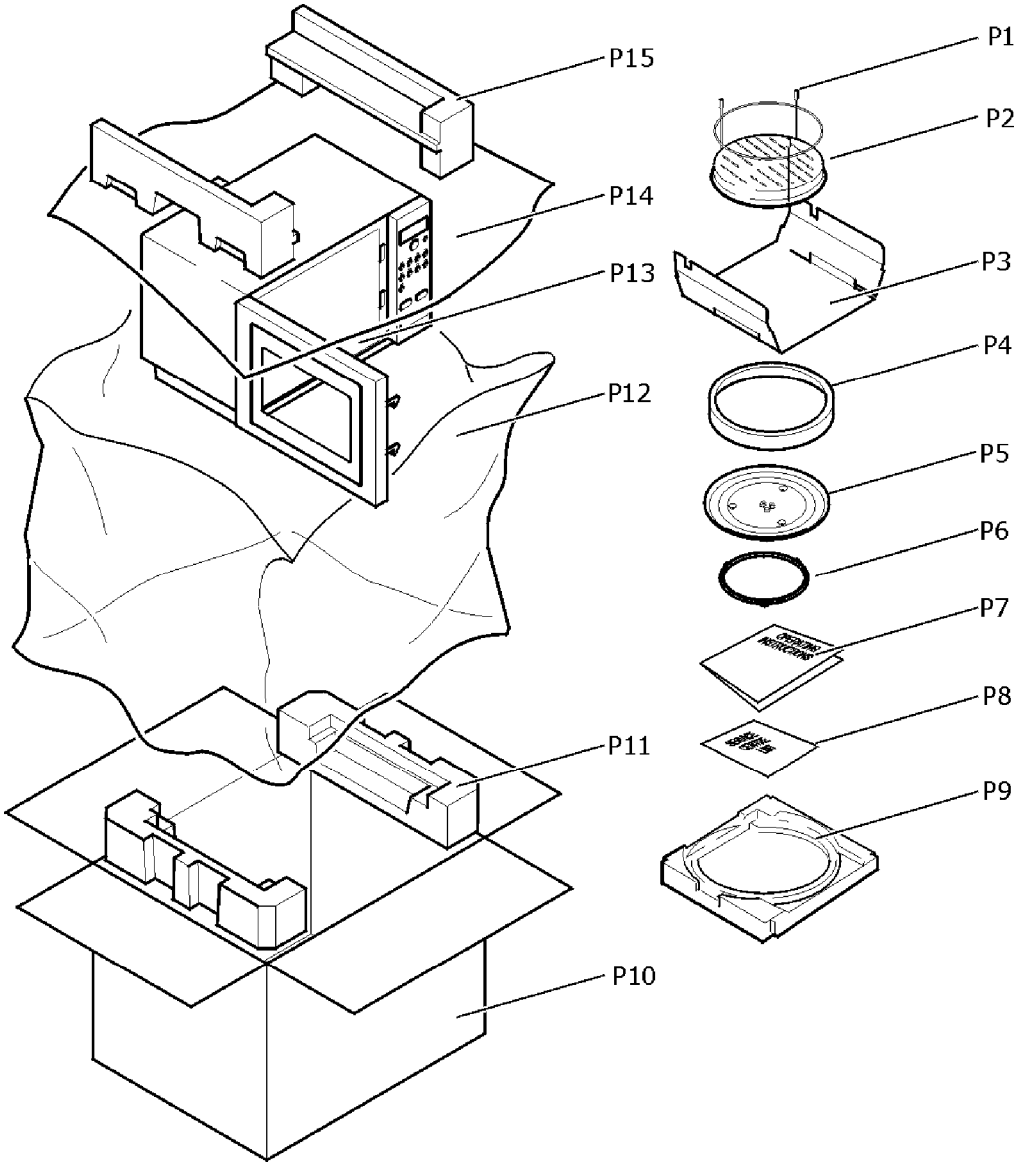


Ref. No.		Part No.	Part Name & Description	Toy	Remarks
E1		E80724L10HBP	DOOR OPENING BUTTON	1	NN-V681WB NN-V651WB
E1		E80725D00SBP	DOOR OPENING BUTTON	1	NN-V671SB
E1		E80724L10NBP	DOOR OPENING BUTTON	1	NN-V621MB
E1		E80724L10BP	DOOR OPENING BUTTON	1	NN-V651CB
E2		E80378AOAG	SPRING	1	
E3		E80344L10HBP	ESCUTCHEON BASE	1	NN-V681WB NN-V651WB
E3		E80344L10BP	ESCUTCHEON BASE	1	NN-V651CB
E3		E80344L10NBP	ESCUTCHEON BASE	1	NN-V621MB
E4		E800S5D00SBP	ESCUTCHEON BASE ASSY	1	NN-V671SB
E5		E81274L10BP	ESCUTCHEON BACK PLATE	1	NN-V681WB NN-V651WB NN-V651CB NN-V621MB
E5		E81274V00SBP	ESCUTCHEON BACK PLATE	1	NN-V671SB
E6	⚠	E603L5D10BP	DPC AU	1	NN-V681WB
E6	⚠	E603L5D00BP	DPC AU	1	NN-V671SB NN-V621MB NN-V651WB NN-V651CB
E7		E66164L00GS	RIBBON CABLE	1	
E8		E82564L10BP	DOOR OPENING LEVER	1	NN-V681WB NN-V651WB NN-V651CB NN-V621MB
E8		E82564V00SBP	DOOR OPENING LEVER	1	NN-V671SB
E9	⚠	E603Y5D10BP	DPC DU	1	NN-V681WB
E9	⚠	E603Y5D00BP	DPC DU	1	NN-V671SB NN-V621MB NN-V651WB NN-V651CB
E10		E83264L10BP	DISPLAY SHEET	1	
E11		E90014N30BP	EARTH STRIP	1	NN-V621MB
E12		E00075D10BP	NAME PLATE	1	NN-V681WB
E12		E00075D00BP	NAME PLATE	1	NN-V671SB NN-V621MB NN-V651WB NN-V651CB
E13	⚠	E83375D10HBP	ESCUTCHEON SHEET	1	NN-V681WB
E13	⚠	E83375D00HBP	ESCUTCHEON SHEET	1	NN-V651WB
E13	⚠	E83375D00NBP	ESCUTCHEON SHEET	1	NN-V621MB

Ref. No.		Part No.	Part Name & Description	Toy	Remarks
E13	⚠	E83375D00BP	ESCUTCHEON SHEET	1	NN-V651CB
E14		E80074L00SGS	SPRING	1	NN-V671SB

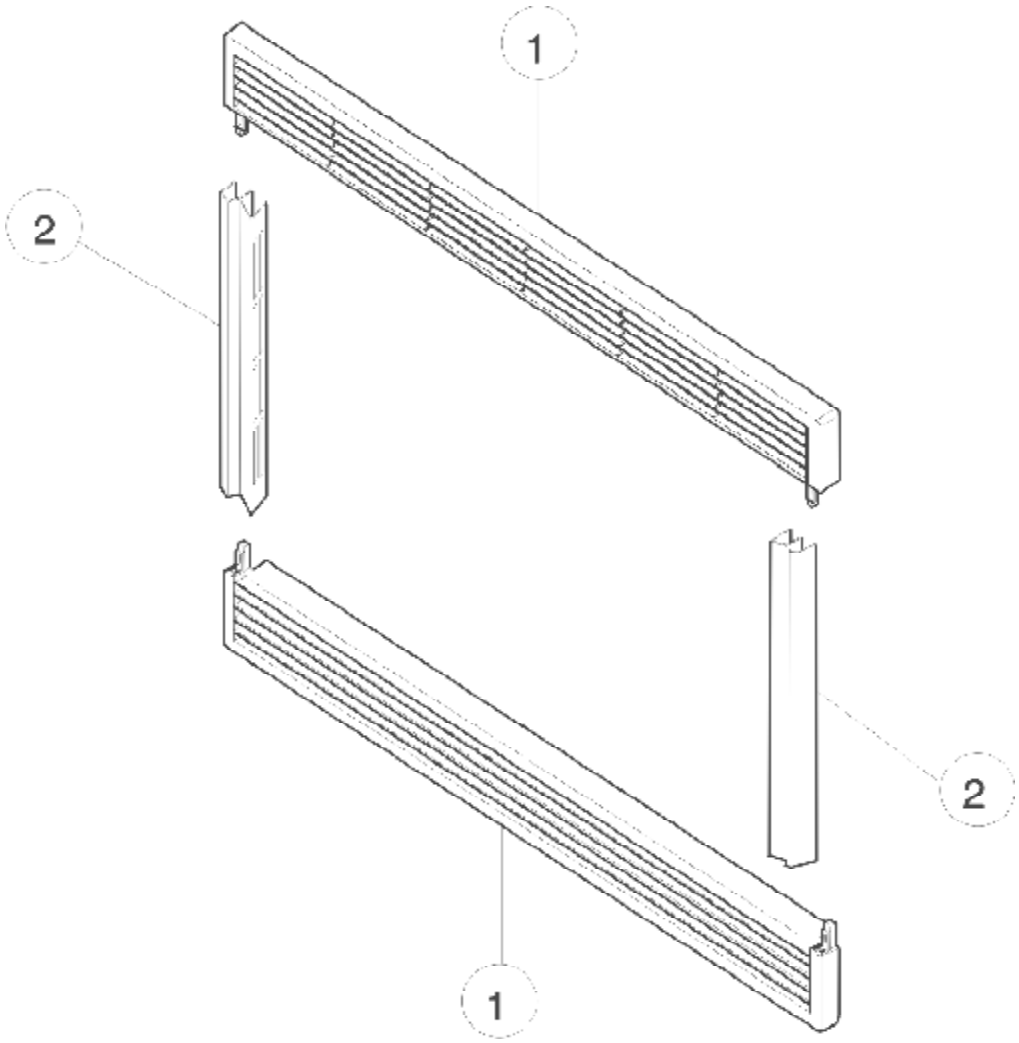
NOTE: Please order the escutcheon base and name plate together
NOTE: When replacing the silver escutcheon sheet ensure it is earthed to the escutcheon back plate via the earth strip
NOTE: When replacing the stainless escutcheon assembly, be sure that the fascia is earthed to the back plate via the earth spring.

17. Packing And Accessories



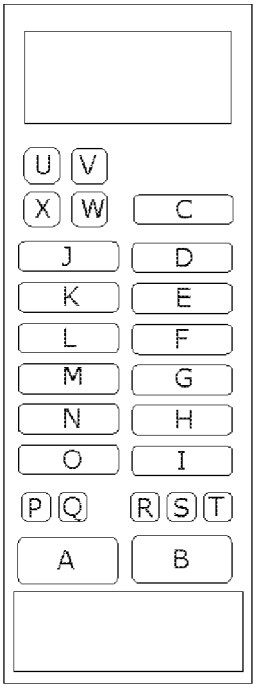
Ref. No.		Part No.	Part Name & Description	Qty	Remarks
P1		E06435870SP	WIRE RACK FOOT BLACK	3	
P2		E060V6520BP	WIRE RACK	1	
P3		E01084N30BP	TRAY PACKING	1	
P4		E06015020UP	ENAMEL TRAY	1	
P5		E06014N30BP	GLASS TRAY	1	
P6		E290D4N30BP	ROLLER RING UNIT	1	
P7		E00035D00BP	COOK BOOK	1	
P8		E01695750BP	SERVICE CENTER LIST	1	
P9		E01134N30BP	TRAY STYROL	1	
P10		E01025D10HBP	CARTON BOX	1	NN-V681WB
P10		E01025D00SBP	CARTON BOX	1	NN-V671SB
P10		E01025D00NBP	CARTON BOX	1	NN-V621MB
P10		E01025D00HBP	CARTON BOX	1	NN-V651WB
P10		E01025D00BP	CARTON BOX	1	NN-V651CB
P11		E01054N30BP	LOWER FILLER	1	
P12		E01064N70GS	VINYL BAG	1	
P13		E01076700BP	DOOR SHEET	1	
P14		E01926430GP	PROTECTOR SHEET	1	
P15		E01044N30BP	UPPER FILLER	1	

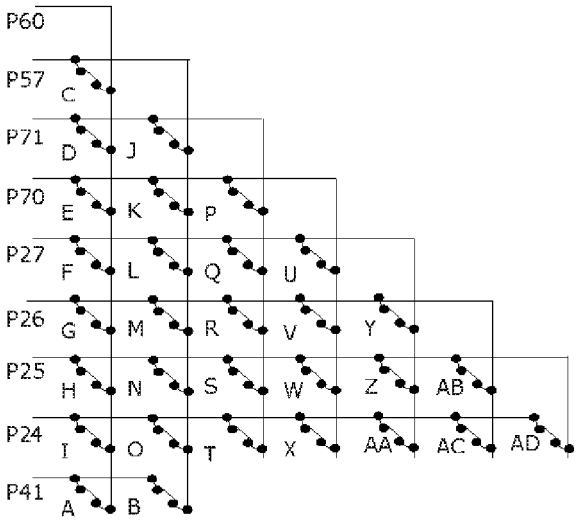
18. Trim Kit Accessories



Trim kit. No.	TOP AND BOTTOM STRIP REF NO 1	Set	SIDE STRIPS REF NO 2	set	Remarks
NN-TKV69W	E1603A510HBP	2	E1601A510HBP	2	NN-V681WB NN-V651WB
NN-TKV69C	E1603A510BP	2	E1601A510BP	2	NN-V651CB
NN-TKV69M	E1603A510NBP	2	E1601A510NBP	2	NN-V621MB
Trim kit assemmbly Instruction			E0003A4N30BP		

19. Key Board Matrix

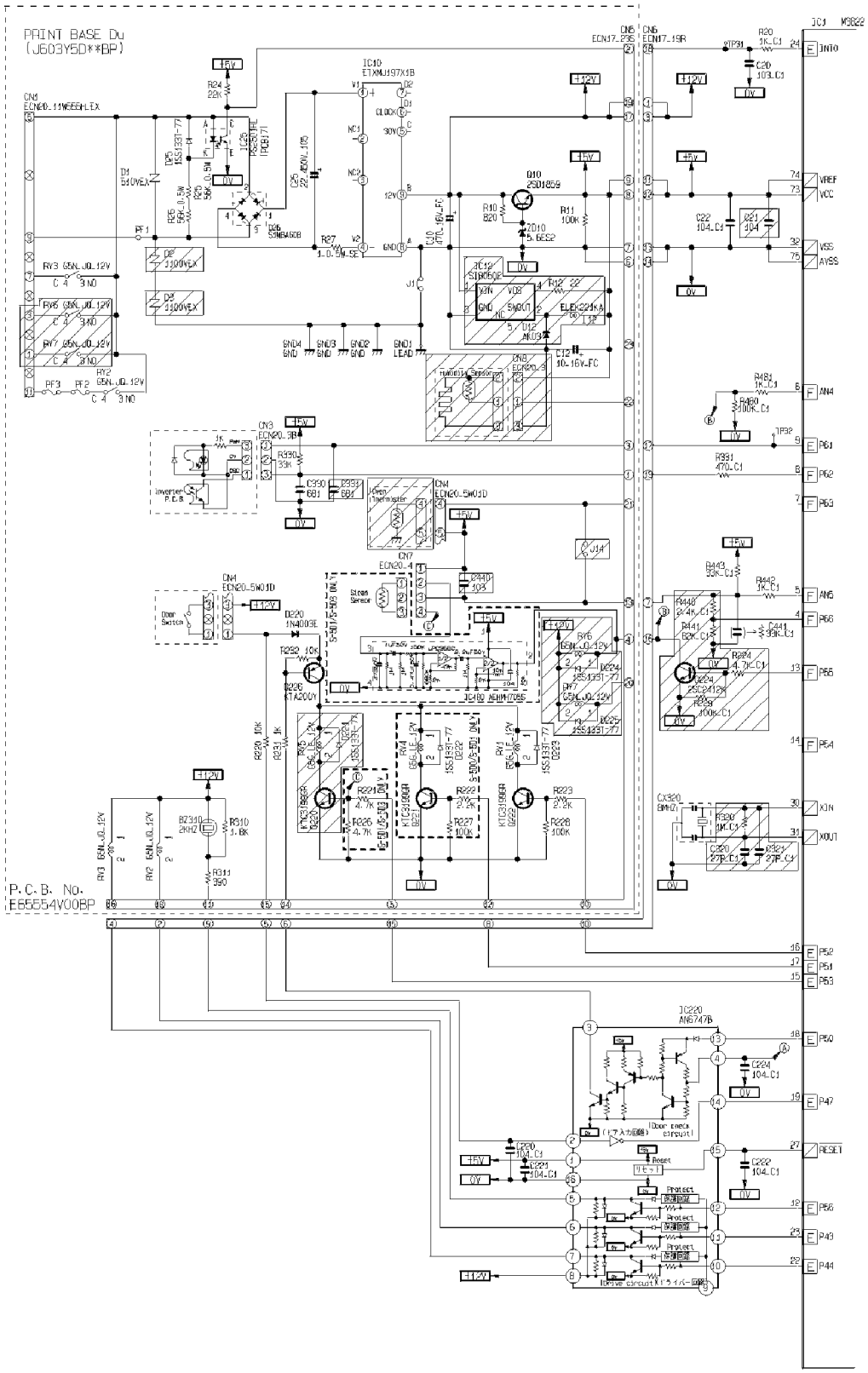




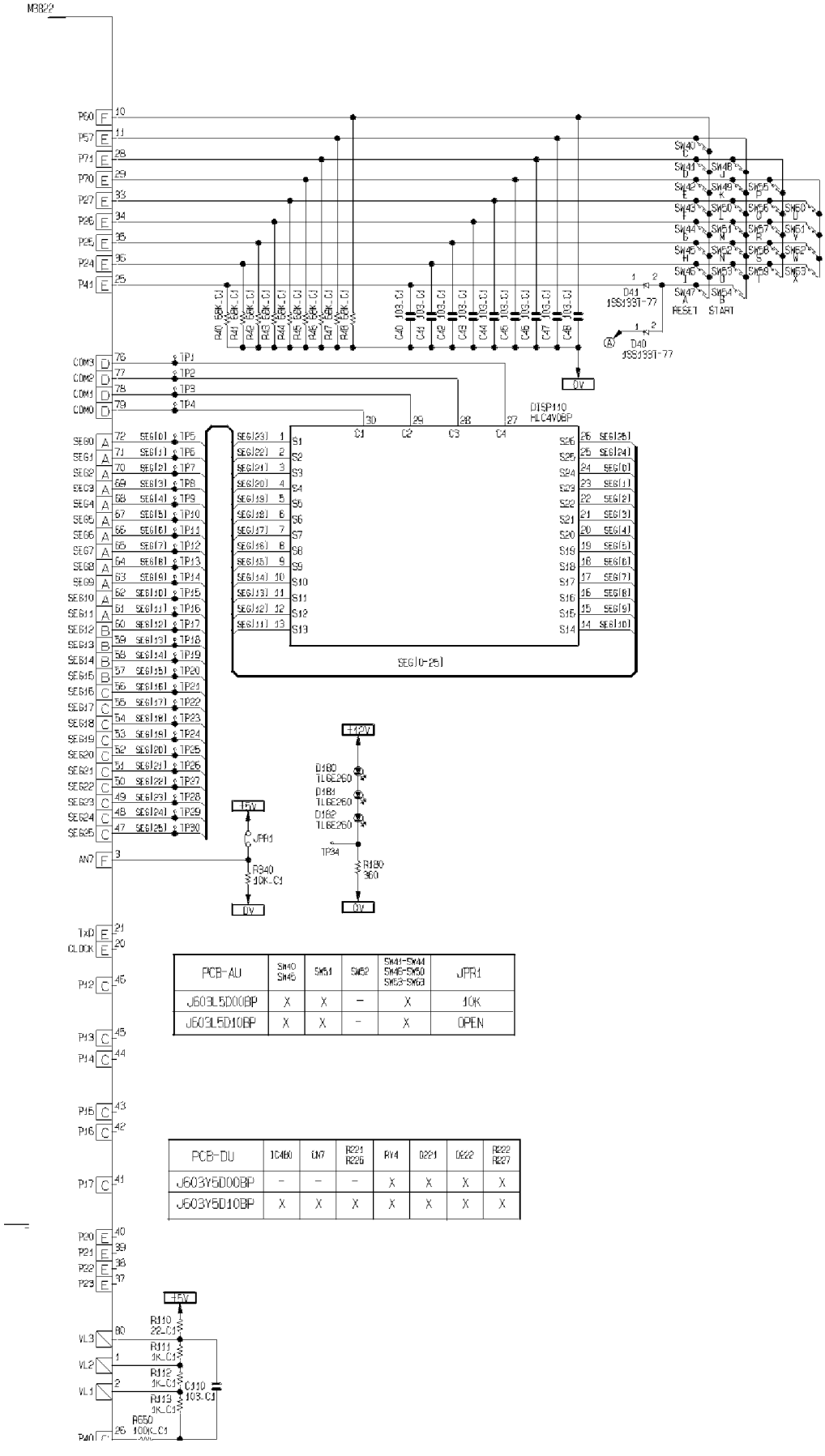
		5D00BP	5D10BP
A	SW47	STOP	STOP
B	SW54	START	START
C	SW40	AUTO(3)	AUTO
D	SW41	AUTO	AUTO
E	SW42	AUTO	AUTO
F	SW43	AUTO	AUTO
G	SW44	AUTO	AUTO
H	SW45	AUTO	AUTO
I	SW46	AUTO	AUTO
J	SW48	TURBO	TURBO
K	SW49	MICRO	MICRO
L	SW50	GRILL	GRILL
M	SW51	COMBI	COMBI
N	SW52	-	-
O	SW53	W.DEFROST	W.DEFROST
P	SW55	DELAY	DELAY
Q	SW56	CLOCK	CLOCK
R	SW57	LB/OZ	LB/OZ
S	SW58	UP	UP
T	SW59	DOWN	DOWN
U	SW60	10 MIN	10 MIN
V	SW61	1 MIN	1 MIN
W	SW62	1 SEC	1 SEC
X	SW63	10 SEC	10 SEC
Y			
Z			
AA			
AB			
AC			
AD			

3 TURBO REHEAT AUTO PROGRAMS

20. Digital programmer Circuit

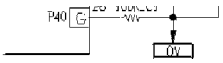


DPC Schematic 1



PCB-AU	SW40 SW48	SW51	SW52	SW41-SW44 SW45-SW50 SW53-SW63	JPR1
J603L5D00BP	X	X	–	X	10K
J603L5D10BP	X	X	–	X	OPEN

PCB-DU	IC480	QN7	R221 R226	RV4	D221	D222	R222 R227
J603Y5D00BP	–	–	–	X	X	X	X
J603Y5D10BP	X	X	X	X	X	X	X



DPC Schematic 2

21. Digital programmer circuit parts list

21.1. E603L5D10BP DPC AU

Ref. No.	Part No.	Part Name & Description	Qty	Remarks
R180	ERDS2TJ361T	360R Carbon Resistor	1	
D40,D41	AESS133T-77	Diode	2	
D180-D182	AESQTLGE260T	Green LED	3	
CX320	EF0EC8004T4	Ceramic Resonator	1	
SW40-SW51 SW53-SW63	EVQ11L05R	Push Switch	23	
C110 C20 C40-C48	AECU1F103Z50	10nF Chip Capacitor	11	
C220 C221 C222 C224 C22	AECU1F104Z25	100nF Chip Capacitor	5	
R111-113 R20 R442	AERJ3GSYJ102	1K Chip Resistor	5	
R481	AERJ3GSYJ102	1K Chip Resistor	1	
R340	AERJ3GSYJ103	10K Chip Resistor	1	
R650	AERJ3GSYJ104	100K Chip Resistor	1	
R480	AERJ3GSYJ104	100K Chip Resistor	1	
R110	AERJ3GSYJ220	22R Chip Resistor	1	
R331	AERJ3GSYJ471	470R Chip Resistor	1	
C441 R443	AERJ3GSYJ333	33K Chip Resistor	2	
R40-R48	AERJ3GSYJ683	68K Chip Resistor	9	
IC1	AEIC8224H150	LSI M3822 (24K)	1	
	A611A4J01XN	Display Holder Unit	1	
DISP110	AEDDHL4V00BP	LCD (NEW)	1	
CN6	AEEM19FESVKN	CONNECTOR	1	
IC220	AN6747B	Custom IC	1	
	E62604V00BP	Print Board(A)	1	

21.2. E603Y5D10BP DPC DU

Ref. No.	Part No.	Part Name & Description	Qty	Remarks
ZD10	AESZMTZ5R6B	Zener Diode	1	
D222-D223	AESS133T-77	Silicon Diode	2	
D25	AESS133T-77	Silicon Diode	1	
D220	AESS1N4003E	Silicon Diode	1	
C330	ECBT1H681KB5	680PF Capacitor	1	
R25,R26	ERDS1FJ563T	56K 1/2 Watt Resistor	2	
R220 R232	ERDS2TJ103T	10K Resistor	2	
R11 R227 R228	ERDS2TJ104T	100K Resistor	3	
R231	ERDS2TJ102T	1.0K Resistor	1	
R222 R223	ERDS2TJ222T	2.2K Resistor	2	
R221 R226	ERDS2TJ472T	4.7K Resistor	2	
R24	ERDS2TJ223T	22K Resistor	1	
R330	ERDS2TJ333T	33K Carbon Resistor	1	
R311	ERDS2TJ391T	390 Resistor	1	
R10	ERDS2TJ821T	820 Resistor	1	
R310	ERSD2TJ182T	1.8K Resistor	1	
Q10	2SD1859TV2	Transistor	1	
Q226	AESAKTA200Y	PNP Transistor	1	
Q221 Q222	AESCKTC3199GR	NPN Transistor	2	
C10	EEUFC1C471B	470uF 16 V Elect Capa	1	
C12	ECEA1CKA100B	10uF 16V Electrolytic Capacitor	1	
R27	ERX12SJ1R0E	1R 1/2 Watt Resistor	1	
CN7	AEEMMF00703R	3 Pin Connector (Steam Sensor)	1	
CN4	AEEMXF00D04W	4 Pin Connector	1	
RY2 RY3	AEBGG5N1A12	12 V Relay	2	
RY1 RY4	AEGG5G1A12	12 V Relay	2	
CN5	AEEM19FEBVKN	19 Pin Connector	1	
CN1	AEEMXD05507W	7 Pin Connector	1	
CN3	E03525D00BP	3-Wire Inverter Connection	1	
IC480	AEHMH705S	Hybrid IC	1	
IC25	AEICP25011HL	Photocoupler IC	1	
D26	AESTS1WBA60B	Diode Bridge (600V)	1	
C25	ECA2WHG220E	22uF 450V Electrolytic Capacitor	1	
BZ310	EFBAH20C001	2KHz Buzzer	1	
D1	ERZV10D511CS	Varistor 510V	1	
IC10	ETXMJ197X1BG	Switching Power Supply	1	

21.3. E603Y5D00BP DPC AU

Ref. No.	Part No.	Part Name & Description	Qty	Remarks
R180	ERDS2TJ361T	360R Carbon Resistor	1	
D40,D41	AESS133T-77	Diode	2	
D180-D182	AESQTLGE260T	Green LED	3	
CX320	EF0EC8004T4	Ceramic Resonator	1	
SW40-SW51 SW53-SW63	EVQ11L05R	Push Switch	23	
C110 C20 C40-C48	AECU1F103Z50	10nF Chip Capacitor	11	
C220 C221 C222 C224 C22	AECU1F104Z25	100nF Chip Capacitor	5	
R111-113 R20 R442	AERJ3GSYJ102	1K Chip Resistor	5	
R340	AERJ3GSYJ103	10K Chip Resistor	1	
R650	AERJ3GSYJ104	100K Chip Resistor	1	
R110	AERJ3GSYJ220	22R Chip Resistor	1	
R331	AERJ3GSYJ471	470R Chip Resistor	1	
C441 R443	AERJ3GSYJ333	33K Chip Resistor	2	
R40-R48	AERJ3GSYJ683	68K Chip Resistor	9	
IC1	AEIC8224H150	LSI M3822 (24K)	1	
	A611A4J01XN	Display Holder Unit	1	
DISP110	AEDDHL4V00BP	LCD (NEW)	1	
CN6	AEEM19FESVKN	CONNECTOR	1	
IC220	AN6747B	Custom IC	1	
	E62604V00BP	Print Board(A)	1	
JPR1	ERDS2TJ103T	10K Carbon Resistor	1	

21.4. E603Y5D00BP DPC DU

Ref. No.	Part No.	Part Name & Description	Qty	Remarks
ZD10	AESZMTZ5R6B	Zener Diode	1	
D222-D223	AESS133T-77	Silicon Diode	2	
D25	AESS133T-77	Silicon Diode	1	
D220	AESS1N4003E	Silicon Diode	1	
C330	ECBT1H681KB5	680PF Capacitor	1	
R25,R26	ERDS1FJ563T	56K 1/2 Watt Resistor	2	
R220 R232	ERDS2TJ103T	10K Resistor	2	
R11 R227 R228	ERDS2TJ104T	100K Resistor	3	
R231	ERDS2TJ102T	1.0K Resistor	1	
R222 R223	ERDS2TJ222T	2.2K Resistor	2	
R24	ERDS2TJ223T	22K Resistor	1	
R330	ERDS2TJ333T	33K Carbon Resistor	1	
R311	ERDS2TJ391T	390 Resistor	1	
R10	ERDS2TJ821T	820 Resistor	1	
R310	ERSD2TJ182T	1.8K Resistor	1	
Q10	2SD1859TV2	Transistor	1	
Q226	AESAKTA200Y	PNP Transistor	1	
Q221 Q222	AESCKTC3199GR	NPN Transistor	2	
C10	EEUFC1C471B	470uF 16 V Elect Capa	1	
C12	ECEA1CKA100B	10uF 16V Electrolytic Capacitor	1	
R27	ERX12SJ1R0E	1R 1/2 Watt Resistor	1	
CN4	AEEMXF00D04W	4 Pin Connector (oo+o)	1	
RY2 RY3	AEBGG5N1A12	12 V Relay	2	
RY1 RY4	AEGG5G1A12	12 V Relay	2	
CN5	AEEM19FEBVKN	19 Pin Connector	1	

Ref. No.	Part No.	Part Name & Description	Qty	Remarks
CN1	AEEMXD05507W	7 Pin Connector (o+o+o+o)	1	
CN3	E03525D00BP	3-Wire Inverter Connection	1	
IC25	AEICP25011HL	Photocoupler IC	1	
D26	AESTS1WBA60B	Diode Bridge (600V)	1	
C25	ECA2WHG220E	22uF 450V Electrolytic Capacitor	1	
BZ310	EFBAH20C001	2KHz Buzzer	1	
D1	ERZV10D511CS	Varistor 510V	1	
IC10	ETXMJ197X1BG	Switching Power Supply	1	